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[OFFICIAL NOTICE.]

Thirtieth Annual Meeting, American Gas Light Association.

OFFICE OF THE SECRETARY,
NEW YORK CITY, Sept. 1, 1902.

General Announcement.—There will be a meeting of the American Gas Light Association held at New York city, October 15th to 17th, 1901.

The meeting will be called to order by the President, Wm. R. Beal, of New York city, at 10 A.M., Wednesday, October 15th.

The meeting hall will be the breakfast room in the New York Athletic Club House, corner 59th street and 6th avenue.

The headquarters will be at the Plaza Hotel, 59th street and 5th avenue.

The most satisfactory quarters are always obtained by writing in advance to the hotel people, and in doing so a reply should be requested, for which a self-addressed, stamped envelope should be inclosed, as misunderstandings may thereby be averted.

The Plaza Hotel has guaranteed to accommodate 100 persons attending the meeting, at the following rates for rooms:

American plan: Single rooms $5 per day; double rooms, occupied by two persons, from $9 per day (that is, $4.50 for each person) and upwards. Some of these rooms have baths and some are without baths. The ones with baths will go to those applying first.

European plan: Single rooms, $2.50 per day; double rooms, occupied by two persons, $4 per day (that is, $2 per day for each person) and upwards. The remarks as to bath rooms on the American plan apply here also.

The Savoy and the Netherland Hotel, both situated at 59th street, on the opposite side of 5th avenue from the Plaza, have each guaranteed to accommodate 50 persons at the following rates, on the European plan:

Single rooms, without bath, $2 per day. Single rooms with bath $3 per day. Double rooms with bath, occupied by two persons, $5 and $6 per day (that is, $2.50 and $3 per day for each person). For those desiring suites there will be a limited number at from $8 to $14 per day.

An effort will be made to obtain rates from some other hotels in the vicinity, and, if successful, notice will be sent to the members before the meeting.

The roll call will be made by means of the door card system. Each member upon entering the hall for the first time will, at the door, receive a special card upon which he will find his name, address, etc., as it appears on the Secretary's books, and such card should be corrected and given to the doorkeeper. Members in attendance should attend to this very carefully, as these cards are used immediately after the meeting for correcting the annual membership list. Visitors will please hand to the doorkeeper their personal cards.

A blank form of application for membership accompanies this circular. More can be obtained of the Secretary.

Remember, all applications must be in the Secretary's hands by October 15th, at the very latest, otherwise they will not be acted upon at this meeting.

LIBRARY OF CONGRESS SEP 29 1902 SMITHSONIAN DEPOSIT.

The list of papers to be read at the meeting is as follows:

"Some Notes on Cement Masonry," by Mr. I. N. Knapp, Philadelphia, Pa.

"The Care and Maintenance of Incandescent Gas Burners," by Mr. McDougald Dexter, Columbus, Ga.

"The Cleaning and Repairing of Gas Stoves," by Mr. Geo. S. Clarke, Kansas city, Mo.

"Gas Rates and a Franchise Tax," by Mr. Geo. McLean, Dubuque, Ia.

Also several other papers, the exact titles of which have not yet been decided upon.

If the papers are of a sufficiently high standard, the Beal medal will be awarded to the author of the best paper presented, the question of which is best to be decided by the proper committee.

The officers are endeavoring to arrange for a lecture on some subject of interest to the members, to be delivered during the meeting.

In addition to the papers and lecture, the report of the Research Committee will deal with the question of Pipe Standards, referred to the Committee at the last meeting, and with other subjects that should give rise to a good discussion; and there will be an interesting report from the Committee on Uniform Accounts. During the days of the meeting all the announcements will be posted on the bulletin boards at the headquarters and meeting hall. All members are warned to take notice thereof accordingly. All members attending the meeting are particularly requested to wear their membership badges in plain sight, thereby greatly aiding the officers and the local committee in their work, by affording a ready means of recognition.

In order that the "Year-Book," containing the report of this meeting, may be published and issued to the members immediately after the meeting, notice is hereby given that, if any of the speakers at this meeting desire to correct their remarks before they are printed, they will be given an opportunity before leaving New York city, but not after. The stenographer will have typewritten copy of the principal discussions prepared at the headquarters between the sessions of the meeting, and all those who desire to correct their remarks must notify the Secretary at the close of the session at which such remarks are made, as all the reports will be turned in to the printer immediately after the adjournment of the meeting.

[Here follows a detailed statement respecting the special rates for transportation—one fare and one-third, going and returning by the same route—that have been promised by the named Passenger Associations. These include the Trunk Line Passenger Association, the Central Passenger Association, the Western Passenger Association and the Southeastern Passenger Association. This series virtually means that any member of the Association may avail himself of the shortened fare under the certificate plan.]

Special.—The entertainment as now planned will include for the ladies a carriage ride on one afternoon and a theater party on the evening of the banquet. For the members there will be provided a banquet at the New York Athletic Club on Thursday evening, and parties will be organized to visit the various gas works, or some of the large electric power stations, or both, on Friday, and if possible an inspection will also be made of part of the work on the underground railway now building in New York at a point where this work has been practically completed. You will be notified later of the price of the tickets for the banquet and other entertainment.

Be sure to obtain a railroad certificate when buying your ticket for New York. The greater the number of certificates handed in, the easier it is to get the reduction in rates for future meetings, since the railroad officials count the certificates turned in as marking the full attendance. In our case the number of certificates is from 50 to 100 less than that of the persons in attendance, and our requests for lower rates are not given the consideration they should receive. Apply for ticket and certificate at least 30 minutes before train time. Each person must sign his own certificate at time of purchasing tickets for New York. Be sure to hand the Secretary your certificates, accompanied by 25 cents for each one, as soon as you reach the headquarters. Apply for return ticket at least 30 minutes before train time, and have your certificates with you. All persons, ladies included, attending the meeting are entitled to the reduced rates from the territories named. Members will please hand their certificates to the Secretary or his clerk upon arrival at place of meeting. If there are 100 members present, holding certificates, each certificate will then be properly indorsed and handed back to the owner before adjournment.

Any members having questions which they desire to put into the question box should send the same to the Secretary as soon as possible, in order to give him an opportunity to have them printed and distributed to the members before the meeting, so as to secure for them careful attention.

ALFRED E. FORSTALL, Secretary.

BRIEFLY TOLD.

NOTES.—

LAST week we reported the resignation of Mr. Bankson Taylor as Local Manager of the New Orleans (La.) Lighting Company, and also noted that Col. J. H. De Grange, Vice-President of the New Orleans Railways' Company, had been appointed to succeed him. Both statements were true, but Col. De Grange's appointment was merely a temporary one. Mr. Taylor's actual and permanent successor at New Orleans is Mr. Thomas D. Miller, whose sensible direction for a long time of the active workings of the Dallas (Tex.) Gas and Fuel Company has been thoroughly appreciated by the owners of that enterprising concern. Nor is Mr. Miller unknown in a public way to the gas men of the country, for last year he completed his term of office as President of the Western Gas Association, and his successful labors, in connection with the development and growth of the Southwestern Gas, Electric and Street Railway Association—of which body he is now Treasurer—are as history to all. The position that he will actively assume in a few days, if indeed he does not take up its responsibilities the 1st prox., is a trying one; but there is not the slightest doubt that he will successfully surmount them. With the rest of his contemporaries, we wish him good luck.

MR. MILLER will be succeeded at Dallas by Mr. James H. Young, who for some time has acted as Superintendent to the Joplin (Mo.) Gas Company.

AT the first annual meeting of the Corning (N. Y.) Gas and Electric Company, which concern represents the comparatively recent union of the gas and electric interests of the named city, the following Directors were elected: A. M. Young, M. J. Warner, P. T. Brady, W. K. Archbold, Chas. F. Brooks, Daniel J. Creem and H. L. Merry. The annual reports revealed a fairly satisfactory condition of affairs, and some discussion was had over the advisability of improving the gas plant, with particular reference to an overhauling and extension of the main system thereof.

MR. GEORGE F. MACMUN, JR., who recently retired from the service of the Marlborough (Mass.) Gas Light Company (which concern he served capably as Superintendent and Manager since 1893) when its properties were taken over by Mr. H. F. Hurlburt, of Boston, and his associates, is in charge of the reconstruction work now on hand on the gas plants at Leominster, Mass., and Laconia, N. H.

MR. D. B. HILL has notified the authorities of Poultney, Vt., that he has accepted the terms and stipulations of the franchise under which he is to construct and operate a gas plant in the named place.

CAPITALISTS resident in Newark, N. J., are figuring over the placing of a gas works in the Calumet (Mich.) copper mining district. Calumet itself is almost large enough to support a gas plant, but with that place as the central point gas could be easily piped therefrom to adjoining settlements. In fact within a radius of 12 miles a population of not less than 30,000 could readily be found.

MR. F. C. KNIESE, who some years ago coonstructed the works of the Equitable Gas Light Company, of Memphis, and who acted as Superintendent thereof since their completion, has resigned from the Company's service.

THE proprietors of the Peoples Gas Company, of Coffeyville, Kas., have purchased the properties and rights of the Coffeyville Gas Company. The latter concern is the one with which Mr. C. H. Welch, formerly of Athens, O., was prominently identified.

MR. ALBERT M. SCHMIDT has been granted a franchise for the construction and operation of a gas works at Earlville, Ills. The life of the grant is 20 years. The place is a very small one, and it does not seem that a gas works there would prove a paying operation.

THE New England Gas and Coke Company has advanced the retail price of coke to $7.50 per ton.

THE American Gas Company, of Philadelphia, has purchased the plant and rights of the Vermont Electric Company, whose possessions are located on what is known as "The Gorge," just above Burlington, Vt. This purchase puts the Company in complete control of the lighting service of Burlington.

THE sale of the properties of the Belleville (Ills.) Gas Light and Coke Company was formally completed some days ago. It is understood that purchasers will rebuild the plant.

[OFFICIAL REPORT—REVISED BY THE SECRETARY.—Concluded from Page 406.]

PROCEEDINGS, TENTH ANNUAL MEETING OF THE PACIFIC COAST GAS ASSOCIATION.

HELD IN THE ROOMS OF THE PACIFIC GAS IMPROVEMENT COMPANY, SAN FRANCISCO, CAL., JULY 15TH AND 16TH, 1902.

SECOND DAY.—AFTERNOON SESSION.

The President—The next number on the programme is a lecture by Mr. Philip W. Tompkins, of San Francisco.

The Secretary—Mr. Tompkins is unable to be present at this time. He came in early this afternoon and as there was no immediate prospect of his paper coming up he was unable to remain. He has asked me to present it for him. I will say that it was at my particular request that this paper was prepared. Some time ago I did a good deal of work in connection with the question of water and sediment in crude petroleum, and in discussing it with him I found that he had gone rather exhaustively into it, and since then has gone still more into the subject. He has familiarized himself, I think, with all the details of it, and is thoroughly competent to speak on the subject. The only criticism I have to make on his paper is that it is rather too technical for us. He has gone into it from the standpoint of the scientist and the chemist, rather than from the standpoint of the practical men such as we are. It makes very little difference to us whether the oil that we buy contains a quarter or an eighth or a tenth of one per cent. more or less of water. Mr. Tompkins has carried his investigations into those extreme details. Nevertheless, I think you will find his paper of interest. While in some respects it is not practical from our standpoint, I think it is wise for us to know wherein even our small errors lie, and I am sure that the members of the Association will be interested in listening to it.

The Secretary then read the paper by Mr. P. W. Tompkins, which had for its title:

NOTES AND METHODS ON THE DETERMINATION OF WATER, SAND, ETC., IN CRUDE PETROLEUM OF LOW GRAVITY.

The recent extensive development of the oil fields of California, with a large production of oils of very low gravity, has brought about the need of some new method for the rapid determination of the crude foreign matter contained therein (sand, water, etc.)

The well known character of the California oils, with from 0 to 40 per cent. of asphaltum, makes the generally accepted method throughout the east—namely, 100 c.c. oil mixed with 150 c.c. gasoline, heated for 6 hours at 120° F., and standing from 2 to 18 hours—not always adapted to the oils in question.

As yet there has been no uniform method for such a determination adopted in this State. In fact, the work done heretofore on the subject has been of rather crude character, and nothing developed of any importance. The different buyers and sellers would agree on some form of the gasoline test which would mutually satisfy the interested parties, hardly any two being alike; and naturally with such lack of uniformity dissatisfaction has arisen and likewise the hope for a more practical solution of the problem. About 2 years ago the subject was brought to our attention, but owing to the lack of time we gave it little or no thought till within the last 8 or 9 months. We first made experiments on some oils of about 17.5° B., with 26 per cent. asphaltum, and with about 4.5 per cent. sand and water, and also on some other oils of much higher gravity.

The method employed for the work was that adopted by the New York Oil Exchange, with some slight variation in the proportion of gasoline. The method worked very well with oils of high gravity, but the results were in all cases a little too low with crude oils from 10° to 20° B. The principal objection to this method for its practical use in the fields here is the necessity of heat, without which the results are in no way correct. From this objection has arisen the need of a gasoline test not dependent on heat to obtain the required results.

A large producer of the Kern River district, who had made a contract extending over several years, to supply oil for refining purposes (500 to 600 barrels a day), the so-called foreign matter to be determined by a ½ gasoline test, came to us some months ago.

The method then in use for this test (one formulated by the purchasers of the oil), was submitted by the producers for our examination and scrutiny, to ascertain its accuracy, etc. This method was accompanied with an average sample of their oil (16.1° B.), to be examined, which had been pumped from a number of wells to the slump holes, and from the slump holes pumped to the settling tanks for further deposition, and it was from these tanks the oil was taken for our examination. Many of these heavy oils, when first pumped from the wells, carry from 15 to 35 per cent. sand and water, but in most cases the majority of it deposits if sufficient time is allowed.

First Method as Submitted to Us.—200 c.c. of oil are put into a stoppered glass graduate holding 1,000 c.c.; 750 c.c. of gasoline are then added and the tube is well shaken to thoroughly mingle the oil and gasoline. The mixture is allowed to stand 24 hours; 900 c.c. of the mixture are then drawn off with a siphon, which draws downward from a point 50 c.c. from the bottom of the tube, leaving 50 c.c. of the mixture, and which contains all the foreign matter there was in the 200 c.c. of oil. This 50 c.c. is then poured into a 100 c.c. stoppered graduate; 50 c.c. of gasoline is then used to wash out the 1,000 c.c. tube, and with the particles of foreign matter washed from the sides and bottom of the 1,000 c.c. tube, and added to the 50 c.c. in the 100 c.c. tube. This is then well shaken, and after standing 24 hours the reading of foreign matter at the bottom is assumed to be the percentage of foreign matter in the oil from which the sample was taken.

While the 200 c.c. of oil and the 800 c.c. of gasoline used would make it appear a 1 to 4 mixture, it is not necessary to point out that this method does not give a ¼ proportion at any stage in the operation. In the first mixture of 200 c.c. oil and the 750 c.c. gasoline the ratio of the oil to gasoline is one to 3.75 parts, while the last 50 c.c. with the foreign matter, and containing approximately 10.5 c.c. of the original oil, and mixed with 50 c.c. gasoline, would be in a ratio of 1 to 9.

Several determinations of the foreign matter were made on the oil by the above method, which we found to be in excess of the true amount, due to the excessive use of gasoline in the last step of the operation. Asphaltene was thrown out of solution which deposited with the foreign matter, giving an erroneous result.

Several determinations were made by this method as amended by us to avoid the precipitation of asphaltene. In short, this is to mix the 200 c.c. of oil with 800 c.c. of gasoline, allowing it to stand 24 hours. Siphon off 950 c.c., retaining part of it (i.e., the petroleum solution) in a wash bottle. The remaining 55 c.c. containing the foreign matter is transferred to 100 c.c. graduate. The liter cylinder is then washed with a little of the petroleum mixture. This is added to the 100 c.c. graduate and the whole allowed to stand 12 hours. By these means the ratio of 1 to 4 oil and gasoline is maintained throughout, and obviates the necessity of using exactly 50 c.c in washing the liter graduate, or of adhering to any definite volume. Any amount necessary to produce the desired result can be used; 25 or 100 c.c., if it is sufficient, would not alter the result.

On all of these determinations the true amount of foreign matter contained therein was accurately determined. The average summary of the work evolved through the various experiments is as follows:

Foreign matter obtained by the method—

As submitted	2.06 per cent.	
As amended by us to avoid the precipitation of asphaltene	1.61 "	
Difference due to asphaltene		.45 per cent.
Actual foreign matter obtained	1.38 "	
Difference due to unavoidable mechanical error		.23 "
Total error		.68 "

The results of the above experiments show that the source of error in this method submitted to us for trial lies practically in the amount of gasoline used at the end of the operation. In the case of this oil the total error is about .7 per cent. Of this approximately .45 per cent. is produced from the last 50 c.c. of the gasoline used, and the remaining .25 per cent. from the trifling amount of emulsion formed in shaking, but principally due to a mechanical error, which is unavoidable, and produced by the adhesion of a filmy coating of petroleum solution to the finely divided clay and globules of water, which do not congeal into one body, but remain completely disintegrated, even after heating.

From subsequent work done on another method, with practically the same ratio of oil to gasoline, it was found that 24 hours' standing is longer than is required to produce complete precipitation of all the foreign matter present.

Nothing more was done on the subject for a few months, when the same parties already spoken of came to us with another method, one then adopted and prepared by the purchasers of the oil for the determination of the foreign matter, the first method having been discarded. This method was also accompanied with another average sample of the producers' oil (16.8° B.), taken in the same manner as was the first sample. The method submitted is given below as we received it.

Second Method.—200 c.c. of oil are placed in a 1,000 c.c. tube, and 550 c.c. of gasoline of 74° B. added, well shaken and then poured into a glass globe of 1,200 c.c. capacity. This globe has two necks, one to fit into the top of the 100 c.c. tube, the other to be corked. The 1,000 c.c. tube is then washed out with 170 c.c. of gasoline, and this washing also poured into the globe. This globe is then set into the top of the 100 c.c. tube, and the mixture allowed to stand 4 hours; 900 c.c. of this mixture is then siphoned off; 80 c.c. of gasoline is then used to wash out the globe (still standing in the top of the 100 c.c. tube) and into the 100 c.c. tube. After standing 1 hour the reading is taken.

This, like the first method, was supposed to be 1 to 4, oil and gasoline test, because of the 200 c.c. of oil and 800 c.c. gasoline used in the operation. As is seen from the first amount of 200 c.c. oil, and 550 and 170 c.c. of gasoline, it is in the ratio of 1 to 3.4 parts, and in the last step with the 20 c.c. of this petroleum solution, containing 4.34 c.c. of the original oil, are mixed with 80 c.c. gasoline, making a ratio of 1 part of oil to 17 parts of gasoline, which proportion would be even greater if the per cent. of foreign matter were taken into account.

As this method promised a greater precipitation of asphaltene in the last step, owing to the decreased amount of oil taken and the increased amount of gasoline used over that of the last method, this point was first investigated. It developed the fact that about 1.25 per cent. asphaltene was precipitated with the foreign matter, nearly doubling the correct reading.

It was further found that the 1 hour standing in the last step of this method was not, in the majority of cases, sufficient to produce the minimum reading, nor was the 4 hours' standing enough to allow a complete precipitation of the sediment in the first step. The average of the work done on this oil, as proposed in the second method submitted, gave the erroneous result of 3 12 per cent. of so-called foreign matter. The error entering into the above figure is clearly shown in the following table:

Mineral matter	.025 per cent.
Organic matter (not asphaltene)	.005 "
Water	1.325 "
Average unavoidable mechanical error	.260 "
Foreign matter by method when properly conducted	1.615 "
Error due to insufficient standing	.240 "
Asphaltene	1.265 "
Incorrect percentage	3.120 "

In other words, the actual percentage composition of the true foreign matter is:

Mineral matter	1.845 per cent.
Organic matter (not asphaltene)	.369 "
Water	97.786 "
Total	100.000 "

As a result of the above investigation in the work subsequently done, the 80 c.c. of gasoline was not mixed with the 20 c.c. containing the sediment, but used simply as a washing fluid to remove all particles from the globe to the cylinder. By this manner of conducting the method the solutions were kept separate, except at the junction of the two liquids, which was not sufficient to produce any appreciable deposit of asphaltene.

The average results of the work done on this method (and this oil) are:

After 1 hour standing (excluding asphaltene)	1.91 per cent.
" 12 hours " " "	1.65 "
Decrease due to insufficient standing	.26 per cent.
Actual foreign matter contained therein	1.40 per cent.
Decrease due to unavoidable mechanical error in method	.25 "
Total error	.51 "

From examination of the above results it is plain that there are two small errors in this method, even when properly conducted.

1. The error introduced from insufficient standing would be overcome if the sample were allowed to stand 12 hours instead of 1 in the last part of the operation. The error is greater in some cases than in others, depending upon how vigorously the 200 c.c. of oil are shaken with the 550 c.c. gasoline when mixing.

2. An error of .25 per cent., due entirely to mechanical causes, which have already been described, and which cannot be overcome by any ordinary means.

We then thought it desirable to compare this second method now under discussion with an oil of known amount of foreign matter; and, therefore, made several determinations on the sample first received, with average results as follows:

After 1 hour's standing	1.75 per cent.
" 12 " "	1.66 "
A decrease due to 11 hours' longer standing	.09 per cent.
Average foreign matter already determined on this oil	1.38 per cent.
Unavoidable mechanical error	.28 per cent.
Total	.37 "

A glance at the several average tables makes it quite evident that the greatest source of error in the first method, namely, the precipitation of asphaltene (error .45 per cent.) is practically eliminated in the second method, if the operation is properly conductd; that is, without mixing the 20 c.c. and 80 c.c. in the last step, without which precaution the error would be much greater.

The foregoing work on these two methods, and the two different samples of oil from the same wells, demonstrate that the unavoidable mechanical error previously alluded to is quite constant, as will be seen below:

Method used	1st.	2d.	2d.
Oil used	1st.	1st.	2d.
Average foreign matter, including unavoidable mechanical error	1.61 pr. ct.	1.66 pr. ct.	1.65 pr. ct.
Average true foreign matter	1.38 "	1.38 "	1.40 "
Unavoidable mechanical error	.23 pr. ct.	.28 pr. ct.	.25 pr. ct.

It has been ascertained that heat does not materially aid in diminishing this error, and is not worth considering in view of the time consumed.

It is well to mention here that the per cent. of asphaltene by volume destroying the true reading of any method cannot be ascertained alone. Owing to the floculent condition of the asphaltene (which has no constant value), it must be determined by difference. To obtain the desired figure, the per cent. of true foreign matter, etc., is deducted from the original incorrect per cent. containing the precipitated asphaltene. This is quite apparent when observing that the asphaltene precipitated alone occupies a much larger volume at first, than after some standing, while the foreign matter and asphaltene determined together, assume nearly the correct volume after the first hour's standing. These facts are more clearly shown by comparing the following summary derived from the work done by the second method and the second sample of oil.

The asphaltene and foreign matter determined together are:

After standing—				
1 hour	4 hours	8 hours	18 hours	4 days
3.12 per cent.	3 per cent.	2.88 per cent.	2.88 per cent.	2.80 per cent.

Total difference between 1 hour and 4 days' standing equal .32 per cent.

The asphaltene determined alone, is:

After standing—	1 hour	18 hours	days
	2.7 per cent.	1.21 per cent.	.8 per cent.
Adding the average true foreign matter, including mechanical error	1.65 per cent.	1.65 per cent.	1.65 per cent.
	4.35 "	2.86 "	2.45 "

The total difference between 1 hour and 4 days' standing equal 1.9 per cent.

The last figures obtained from adding the asphaltene determination alone, to the correct foreign matter, to include mechanical error, only agree at the point of 18 hours; before and after that time they are at variance.

We have found from practical experiments that 8 hours' time is necessary to render the deposit of foreign matter complete for all practical purposes, while the 4 hours prescribed in the first step of the second method is inadequate. In the last step of this method, where the foreign matter is concentrated into a small bulk, the precipitation takes place very much more rapidly, and in a few cases the one hour allowed by the method is sufficient to give the minimum reading; but the precipitate does not in the majority of cases reach its most settled or compact state for several hours. It has been demonstrated that 18 hours is the time necessary to cover all conditions, after which period it does not change further.

Since the density of the oils vary so in this State, it is not practicable to prescribe any fixed amount of gasoline to be used in these methods for all oils. It may be said that 800 c.c. of 70° B. gasoline and 200 c.c. oil are about the right ratios for crude petroleums between 15° and 20° B., but below 15° B., 850 c.c. gasoline and the same amount of oil are preferable. Between 20° and 28° B., 750 c.c. gasoline and 200 c.c. oil are all that is required to give satisfactory results, and beyond these points there is little or no call for such determinations.

With the heaviest of these oils, 850 c.c. 70° B. gasoline is a safe limit to use, so as not to endanger the precipitation of asphaltene. From experiments on an oil of 12.5° B., we found that with 200 c.c. of oil and 900 c.c gasoline, 70° B., the danger line was approached, and when the same amount of oil was treated with 950 c.c of gasoline a slight deposit of asphaltene took place.

In conclusion this second method, when proper precautions are taken, is nearly correct, and a great improvement over the first method in its ease of manipulation. However, the precautions necessary to obtain correct results so closely border on danger lines that they must be strictly adhered to. In order to free this method from several unsatisfactory features and make it uniform for all operators, we have, after careful study and much practical work on this subject, adopted the following: 200 c.c. of the well averaged oil are placed in a 1,000 c.c. graduate and 600 c.c of 70° B. gasoline added, thoroughly mixed and then transferred to a large (about 1,200 c.c. capacity with a wide and deep neck above the stop cock) separatory funnel.

The liter graduate is then washed out with 200 c.c. gasoline and washings also added to the funnel (thus making the 1 to 4 mixture), its contents well mixed by a rotary motion, and then set aside to stand 8 hours. After this time has elapsed 925 to 950 c.c. of this mixture are drawn off, by first starting the siphon when the end of the tube is near the surface of the liquid, then lowering it gradually to the proper point marked on the separatory funnel, retaining part of the siphoned mixture in a wash bottle. The 50 to 70 c.c. remaining in the funnel are mixed by a rotary motion, the stopcock opened and the liquid containing the foreign matter is allowed to flow into a 100 c.c. graduate. The funnel is then thoroughly washed out with the siphoned petroleum mixture, and the washings also added to the graduate. Generally 30 to 50 c.c. is ample to remove all traces of foreign matter from the funnel, making a total bulk in the graduate of about 100 to 125 c.c., though no particular volume is required. The 100 c.c. graduate is then rotated rapidly between the palms of the hand to dislodge any particles adhering to the side of the graduate. This is allowed to stand 12 hours and a reading then taken.

This manner of conducting the operation, which to our mind is the most simple and satisfactory way of any method yet advanced for the determination of foreign matter as applicable to the heavy oils of California, maintains a uniform proportion of oil to gasoline throughout, with no danger from the precipitation of asphaltene and overcomes the error produced from insufficient standing.

The method just described was tested with a heavy Kern river oil (12.4° B) before it was finally adopted by us. The sample stood in our laboratory for more than a year and contained an unusual percentage of foreign matter for such long standing.

The oil was drawn off from the surface, to avoid taking up any sand or water that might have settled out. That which was found in the sample so drawn off probably never would deposit further. The result was 11.8 per cent. of matter foreign to the oil, with a percentage composition of:

Water	5.8 per cent.
Mineral matter	4.7 "
Organic matter (not asphaltene)	.5 "
Unavoidable mechanical error	.8 "
Total	11.8 "

The mineral matter in the various oils examined was not sand in the strict sense of the word, and was in a very fine state of division.

A general idea of the mineral contents of the oils can be gathered from a partial analysis made of the 4.7 per cent. mineral matter contained in the oil last referred to, which had:

Silicon	(SiO_2)	52.70 per cent.
Ferric and alumina oxide	(Fe_2O_3, Al_2O_3)	24.15 "
Line	(Ca O)	6.38 "
Magnesia	(Mg O)	1.79 "
Sulphur trioxide	($S O_3$)	3.91 "
Undetermined (soda, potash, carbon dioxide, etc,		11.07 "
		100.00

In their natural state parts of these ingredients exist in the form of some insoluble silicate, while a considerable portion is readily soluble before fusion.

It must be borne in mind that the per cents of foreign matter obtained from properly conducted methods of the kinds given are not strictly accurate, but are sufficiently close for most practical purposes. The unavoidable error entering into the method last described is proportionately about .2 to 1 per cent. in excess of the true amount, in oils containing from 1.5 to 13 per cent. of foreign matter; but as the majority of the oils tested do not contain more than 5 to 7 per cent. foreign matter, and usually less, the error involved is not greater than .3 to .5 per cent. Should greater accuracy be required totally different and more laborious methods must be resorted to.

Discussion.

The Secretary—I have here a sample of that oil which I thought would be of interest to the members on account of its having stood for a year on a shelf in the laboratory. Subjected to ordinary room temperatures it still contains 11.8 per cent. of foreign matter, although it is not apparent to the eye.

The President—This paper to oil men must be very interesting. It is open to discussion.

Mr. Lowe - It is a little more than a mere paper for the Association. As I understand the matter this is a complimentary lecture given us by a man not a member of our Association, and I think we have been almost discourteous to him, as this is a paper which should have been presented earlier in our meeting. It is too bad it cannot be discussed—probably it could not be discussed; but I move you, sir, a most hearty vote of thanks to Mr. Tompkins for the matter put before us. [Adopted.]

Providing for Exhibiting New Things at the Association Meetings.

Mr. Hollidge—Last year I ventured the remark (and I now do so again) that we have in this Association certain departments as, for instance, the "Wrinkle" and "Experience" Departments, which serve their respective purposes excellently, but which are deficient in one particular. They bring to our attention many good ideas and devices in the abstract, and I believe these things should be placed before us in concrete form. There should be models of the various new devices suitable to the needs of the gas man, also samples of the new styles of valves, pipe, meters, etc., on exhibition for inspection and critical examination by members of the convention. For instance, friend Colquhoun of the "Wrinkle" Department showed us yesterday morning a drawing of a certain device. How much better and clearer it would have been could he have shown us the thing itself, or a model of it? The electrical goods houses are persistently pushing the sale of their wares and placing samples before their customers. In matters of this sort the gas interests are somewhat neglected. I move you, therefore, that a department be created in this Association for bringing together for display at annual meetings such new articles on the market as may be of interest and value to the gas as well as to the electric interests.

Mr. Lowe—I would like to amend the motion. Last year, or perhaps the year before, I spoke very much on the same lines. At that time we discussed the advisability of inviting the manufacturers of gas appliances to send them to us, of course paying the transportation charges, we assuming the duty of displaying them. I think it would be well if we appointed a committee to search for these novelties and invite manufacturers to send them. I offer as an amendment the appointment of a committee of one on invitation to the manufacturers, who will undertake the work of hunting them up and their care and return, upon the understanding, of course, that all costs connected with the transportation, both coming and going, are to be borne by the exhibitors.

Mr. Hollidge accepted the amendment, and the motion as amended was adopted.

The President appointed Mr. Hollidge to serve on the committee.

Other Sundry Matters.

Mr. Keyes—One matter that I think is of vast importance to the gas men of this Coast seems to have been neglected by us. We have had papers on very many subjects, but I would like to suggest that next year someone who is capable prepare a paper on the subject of electrolysis, in which paper would be outlined some some way to prevent as much as possible the damage that is done by electricity to our gas mains. The subject has been treated in the Gas Journals several times, and I think we have members in this Association who are competent to give us a paper next year on that subject.

Mr. Lowe—If you will read the proceedings of the Association you

will see we have already had a very interesting paper on that subject, by Mr. Aldrich about 4 years ago.

Mr. Martin—If you will read the proceedings of the American Street Railway Association of 2 or 3 years ago, you will get all the information you want in regard to how to protect pipes from electrolysis. It is a simple matter to-day to know how to prevent it. You can buy appliances for that purpose which will absolutely eliminate any electrolysis on your pipes by insulating your pipes from each other, without any difficulty at all.

The Secretary—If our library had been established a little sooner, and was in full operation, Mr. Keyes would have been able to get that information through the library. We would have all those JOURNALS on hand, and we would have them properly indexed. We would have catalogues revised from time to time and sent out to members, so that any member, no matter where he might be situated, could get whatever information he desired with very little trouble. I think this is one thing that emphasizes the advantage and immense importance of a library.

Mr. Jones—In this connection I would like to say we can now afford to buy another book or two. The American Stove Company has donated, through Mr. Boardman, its agent, $100 towards our library fund. (Applause.)

APPOINTMENT OF AN ADVISORY COMMITTEE.

Mr. Lowe—That leads to another matter that we are overlooking at this time, the appointment of an Advisory Committee. If we had a committee of that sort Mr. Keyes might have referred to it at once. It would probably be composed of the best informed and practical men of the Association, and I think it very important that the committee be appointed according to Mr. Britton's suggestion. I move that an advisory committee of three members be appointed to whom the members moy apply at any time during the year for information. [Seconded and carried.]

The Chair appointed as members of the Advisory Committee Mr. John A. Britton, Mr. John Martin and Mr. E. C Jones.

A RESOLUTION OF THANKS.

Mr. Martin—Inasmuch as the Secretary is busy I will voice a resolution, which Mr. Jones and myself prepared, that reads as follows:

Resolved, That the thanks of this Association be extended to the Pacific Gas Improvement Company for the many courtesies extended; and that we vote rising.

The motion was duly seconded and carried by a rising vote. The announcement of the result was received with applause.

Mr. Baurhyte—I regret exceedingly that the President of our Company, Mr C. O. G. Miller, was unable to attend the meeting, but in a communication received from him this morning he said it would be utterly impossible, but he desired me to express to the Association his appreciation of its acceptance of his tender of the use of this hall, and also to state to you that next year—should you meet in San Francisco, which I believe is the regular thing—he would be pleased to have you assemble here again.

Mr. Lowe—Where is Mr. Miller?

Mr. Baurhyte—Mr. Miller is away on account of his health.

Mr. Lowe—I move that a telegram be sent to Mr. Miller setting forth our appreciation, regretting his inability to be present because of his ill health, and thanking him for the courtesies extended. [Seconded and carried.]

Mr. Britton—I move that the next meeting of the Association be held in these rooms in 1903, accepting the offer of Mr. Miller. [Seconded and carried.]

MR. BARRETT'S RESIGNATION NOT ACCEPTED.

The Chairman—You will please give attention to some communications in hand by the Secretary.

The Secretary—I have a great number of communications from members and those interested in our welfare from all parts of the United States; in fact, too many to read. There is one, however, over which I would like to ask your indulgence for a few moments. It is the resignation from membership of Mr. William G. Barrett, for many years Secretary of the San Francisco Gas Light Company, and until quite recently Secretary of the San Francisco Gas and Electric Company. I would like to and do move that Mr. William G. Barrett's resignation be not accepted; and, furthermore, that he be made an honorary member of this Association.

Mr. E. C. Jones—I rise to second that motion. Of course all of the older members of the Association know Mr. William G. Barrett, who was formerly Secretary of the San Francisco Gas Light Company, and afterwards Secretary of the San Francisco Gas and Electric Company. Perhaps some of the newer members do not know him. Mr. Barrett is one of the dearest men that God ever made, a gentleman whom nobody knows anything against. Everybody who knows him loves him. He has been in the gas business 42 years, and last February, at the annual meeting of the San Francisco Gas and Electric Company, he was retired on account of his age and his long service to the Company. I think it would be a compliment to Mr. Barrett and a credit to our Association to put him on our list of honorary members. He is perhaps, if not the oldest, one of the oldest gas men in California. [The motion was carried.]

APPOINTING THE EDITORS.

The President—It becomes my province now to appoint the Editor of the Wrinkle Department and the Editor of the Experience Department for the ensuing year. I will appoint as Editor of the Wrinkle Department Mr. George S. Colquhoun, who has served us very well during the last term. (Applause.) I will appoint as Editor of the Experience Department, Mr. R. P. Valentine, of Sacramento. (Applause.) I believe we have concluded our labors as per the programme, and I turn over the emblem of authority to your worthy President-elect. I thank you heartily, not only for the honor conferred upon me in placing me where you did a year ago, but for your kindness and attention and support during this session. Gentlemen, I thank you. (Applause.)

ADJOURNMENT.

President-elect Osborn took the Chair and said: Gentlemen, I feel stronger than I ever did in my life. Is there any further business to come before the convention? If not, a motion to adjourn is in order.

On motion of Mr. Keyes the meeting was ordered adjourned.

[Prepared for the JOURNAL.]

Lights of the Moros: Some Odd Designs Employed in the Mohammedan Homes.

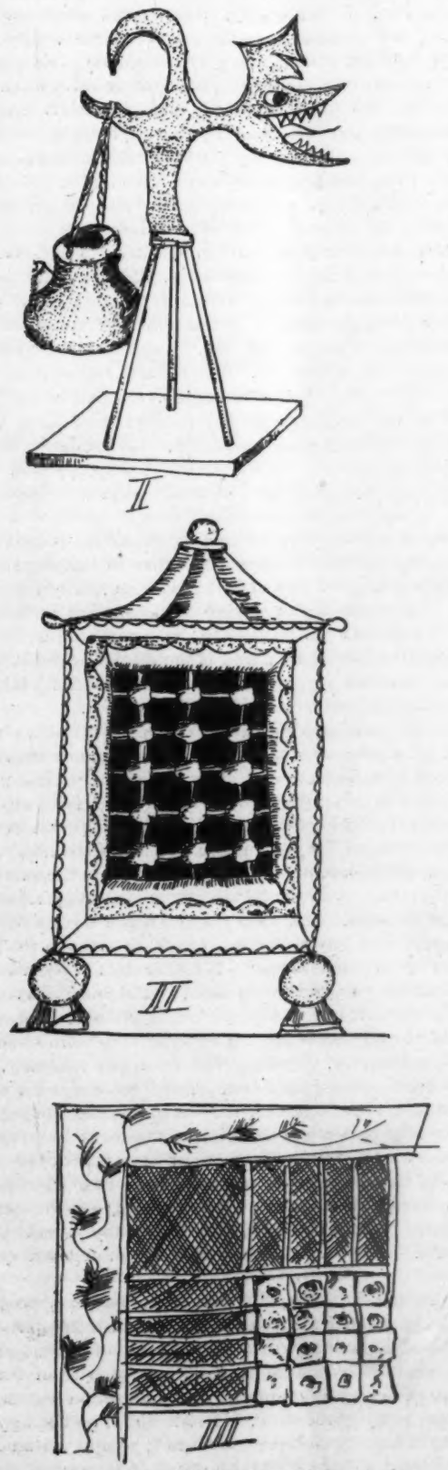
By a SOLDIER.

Perhaps your readers would like a description of some of the systems of lighting employed by the newly Americanized races of Mohammedan Moros, of the Island of Mindanoa. Your correspondent is at present traveling in and around Zamboango, Jolo, Cottobatto, Paran, Malabang and other points of importance in the Moro section of the new United States properties in the Pacific. These Moros are different from the Tagalos and the Bisayans of the other islands of the Phillipine group, and their customs of lighting their homes, shops and streets are different. All of the races use the common petroleum oil, cocoanut oil, fat oils, candles, wood fire lights and the like, but the custom of utilizing differs. The Moro artizans are very ingenious in the designing and constructing of lights. It must be known that there are various grades of Moros, and even in the lights of the homes these grades are indicated by colors. The Sultans, for example, use the reds and the yellows in all manner of form, indicating their high rank. Then there are the middle grades, the Dattos, who likewise use colors in red and yellow in their clothes, their coats of arms, their helmets and their lights. Then come the lower grades of Moros—those who are practically the slaves of the Dattos, and yet are permitted to live in houses of their own. The varied types of lights as used by these people and the merchants of the towns are many. The annexed cuts will give the reader an idea of some of the fantastic lighting devices which the writer sketched while sojourning about in this portion of the Moro world.

Some Crazy Forms of Lights.—Fanaticism and wildness in design are sought for by the singular Moro. The so-called Lake Moros, or those in the interior of the vast island of Mindanao, are particularly fond of having various designs attached to their lamp stands. For example, the style of light shown in Fig. I. is of this order: The rough metal is forged out so as to form a head, in which rows of teeth may be seen and a glaring eye. Often the eye is a pearl set into the socket, and this pearl gleams and burns at you in the night. The tongue is usually of the forked idea. The grades of metal used in making figured lamp stands of this pattern are first iron. The natives manage to mine a very little iron ore in the hills, but they use wagon tires and rod iron and any part of old iron, files and the like which happen to come into their possession. Days, weeks and even months are consumed in working out some of the hideous headpieces for the fantastic Moro patron. He does not concern himself very much about the light itself, but he does insist upon having crude and startling figureheads. Attached to the portion holding the head gearing is the hooked part, to which is connected the chain sus-

taining the oil vessel in which the wick is inserted for burning a jet. These lights are placed in rooms, in halls and at arches leading into the walls which surround most of the houses of the Moros, especially in the interior, where your correspondent found every man's house practically a little fort.

On an Extensive Scale.—I saw some Moro lights glimmering inside of frames put up on the order of the sketch exhibited in Fig. II. The frame work is brass and is of considerable value in this country. The work is done entirely by hand and considerable time is expended by the Moro artisans in getting the desired forms with their crude tools. There is a frame put in which is calculated to hold the individual pieces of transparent shell. This shell is found on the beaches in the sands and is very thin. The light penetrates readily through the shell. It is made more transparent by polishing. These pieces are cut in a square formation and inserted in order in the metal framework as shown, forming the sides of the lantern-like lamp. Three or four ordinary oil lights are usually used inside the case, and the light reflects through the shell work making a queer yet effective illumination.

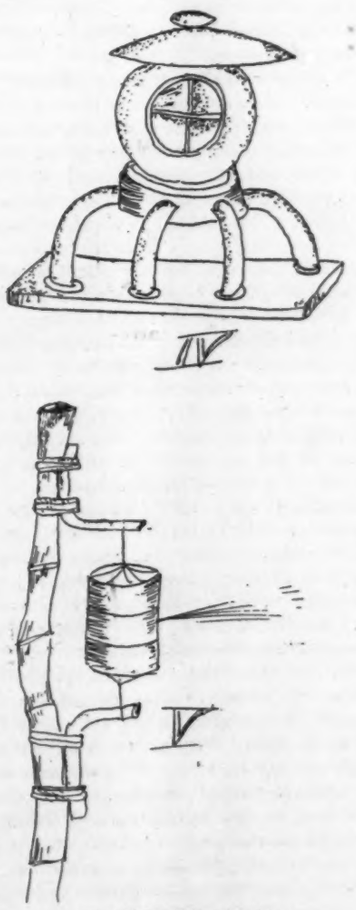


Some Styles of Lights of the Moros

Lights Back of Windows.—I observed a number of instances in which these transparent shells were fixed in the center of window frames, as illustrated in Fig. III. Then just in the rear of these portions, the bright light is adjusted and the light glistens, throwing all manner of shadows and colors of light. The window framework in this case is usually artistically decorated, and sometimes the work of the artist is excellent.

Street Light.—Street light in the leading places in the Moro country has during the past year or two fallen into the hands of the United States officials, and in some places we notice they have modern lamp-posts with lights using petroleum, carbide and now and then candles. In Fig. IV. is a form of light used by the Moros, for in the interior one may see the old Moro lights for street service still in use. In this case the body of the lamp is a hollowed metallic form of brass, with a saucer-like cap. There are glass sides in the metal device as shown. The fantastic form of the lamp is in the scrawly legs upon which it is supported. These legs are likewise of metal, and are set into little sockets cut in the metal, stone or wood base piece. This base piece usually rests upon the top of a post, or is set on a rock or tree stump.

On the Idea of the Chinese.—In some places the Moros adopt street lights which are not very unlike the street lights of the Chinese. Your correspondent visited both China and Japan and saw lights similar to these. Fig. V. is a sketching of one of them. A bamboo pole is set into the ground, and fixed to it are two pieces of metal strapping, bent to the proper form to permit of securing to the pole and for the joining in of the lantern, as shown. These lanterns, which are thus fixed in place between the brackets, are usually of the Chinese order. In fact I saw that some of them were imported from Hong Kong and were used only on festive occasions. Again, I was shown instances in which the lanterns were employed as a regular thing for night lighting of streets and parks.



Moro Ideas of Street Lights.

Opening for American Street and House Lights.—I was never in a country in which such a varied lot of lamp designs are in service. You

see here in the Isle de Mindanao, one party using the crude cocoanut shell cup, with oil and a wick dipped in and lighted, while others are using American acetylene bicycle lamps at the entrance of the arches leading into their houses. You will find homemade tallow dips and inferior grades of imported candles from China, burning alongside of the highest grades of American metal lamps. Some of these imported lamps are of the most improved and costliest type. The richer classes of natives do not figure on the price when they want lamps to show. They like show. I think there is a great chance for American street lights and house lights in this part of the Philippines. The country has been recently opened to commercial interests. That is, Zamboango and a few places have always been available for trade, but at present writing not only Zamboango but all of the towns in the interior and along the coast are available for business interests, as most of the places are garrisoned.

The Housing of the Gas Cooking Stove.[1]

By Mr. Norton H. Humphrys.

It is a remarkable fact that, though the gas cooking stove is very much in evidence, and many gas undertakings are able to record that, of th total number of customers on the books, 50 per cent. or more are user of this appliance, by far the larger proportion are fixed without any regard to proper ventilation and removal of the products of combustion, or at least with very rough-and-ready home-made, imperfect and incomplete arrangements in this respect. The answer may be that in practice the matter adjusts itself "somehow," as there is no widespread or general complaint, and the stove is so largely used. But it is not wise to accept this as a conclusive reply, or to ignore an obstacle that is responsible for losing many customers.

The fact that the gas stove is already fairly popular, in spite of an undoubted disadvantage, should not be allowed to mask the equally obvious conclusion that many people object to advertising the nature of the food in course of preparation in other parts of the house, or to odors of fried fish, boiling vegetables, and other reminders of the cookshop order, in the bedrooms and principal rooms. I do not give the enemy cause to blaspheme by suggesting that this is the usual accompaniment of the gas cooking stove. But everyone who has had extended experience in the placing of such appliances, will recall examples where, on account of structural peculiarities, these objections could not be remedied, and the stove was rejected in consequence. The tendency of the age is in the direction of "noble entrance halls" and "elegant reception rooms," rather than well equipped, roomy and efficiently ventilated kitchens. Further, one occasionally meets with an impression that the gas stove necessarily makes the house stuffy, steamy, and uncomfortable—an impression that is supported, if, indeed, it was not originated, by the atmosphere of many of our gas exhibition and cookery demonstration rooms. Gas burners are used liberally, in order to illustrate their capabilities to intending users, without regard to the temperature or state of the atmosphere, with the result that the visitor entering from outside, towards the close of the evening, finds an atmosphere of a hot, oppressive, steamy, burnt iron, gassy, and cookshop order, offensive enough, in all conscience, to lead him at once to forswear the use of gas at any price. No doubt, it is a grand thing to be able to say that 50 per cent. of the customers use gas cooking stoves. But why should the thing stop here? It is equally pertinent to ask why the other 50 per cent. do not also avail themselves of an admittedly useful and convenient appliance. The answer is to a great extent involved in the subject under consideration. With proper attention to housing and ventilation, the gas cooking stove would become as much a part of the consumer's outfit as the meter and main tap.

For obvious reasons, no one would think of setting a coal or coke cooking stove with no arrangement for taking off the steam from the utensils, and the products of combustion from the hot plate, and with only a makeshift and temporary arrangement as regards heat, etc., from the oven. A device that only took care of about half the products of combustion, leaving the remainder to escape freely into the apartment, would not be tolerated for a day. Yet many gas stoves are fixed without any provision for ventilation; and the majority of the remainder have nothing beyond a tortuous sheet iron pipe connected to the outlet from the oven and tapped into the nearest chimney flue. In my experience, not 5 per cent. of the stoves have anything further; the products of combustion from the boiling burners and griller being allowed to take their chances, together with the steam from the saucepans, vapors from frying or stewpans, etc., that are used on the top of the stove. Hoods of various patterns, intended to completely house in the top of the stove, are listed by all the principal makers; but they are not in favor, and, indeed, are not of much use unless connected to a flue of suitable construction and dimensions. It will usually be found hat a larger proportion of the heated air current, etc., streams out into the apartment under the eaves of the hood, than that which passes away through the recognized outlet. It is by no means a safe conclusion that the nearest chimney flue is suited to act as such for the gas stove. Sometimes it will not do so as regards its own particular purpose. Undoubtedly, many do act with fairly satisfactory results in practice; but this is by good luck rather than by good management, and is not a sound foundation to depend upon. The ordinary house chimney, intended to convey away the smoke and soot from a coal fire, is liberally proportioned to contain several months' accumulation of soot, and is therefore, when fairly clear, much too large in sectional area to act as an efficient flue. Consequently, it sometimes combines the functions of a cooling and condensing apparatus with those of a flue. A flue is a passage or tube for taking away objectionable gases and vapors, conveying them out of the apartment, and getting rid of them by discharge and diffusion into the outer air. Two conditions are necessary to efficient action in this respect. The passage must be so proportioned in sectional area, as compared with the volume of the gases to be delivered through it, as to admit of a sufficient velocity or rate of flow. The slower the velocity, the weaker the current and the greater the liability to disturbance by wind or other adverse influences. One reason why the ordinary domestic chimney is so sensitive to the effects of wind is its comparatively large sectional area, which checks the velocity to such an extent that a feather will turn the scale; and then the flue must either be constructed of non-conducting material, or otherwise lagged to prevent absorption of heat. Any extensive cooling is fatal to the efficient action of the flue. The difficulty of starting a draught in a cold or damp chimney is well known. A long length of thin sheet iron pipe is more efficient as a condenser than as a flue, and consequently it frequently gives trouble from accumulation of rust.

The object of a condensing chamber is exactly opposite. The velocity is checked, and the absorption of heat encouraged in every possible way. It is made of large sectional area to admit of a slow rate of travel, and of a good heat conducting material, so that the products may be rapidly cooled. Further assistance in this direction is secured by the application of water to the exterior in various ways, either by means of a jacket or by jets. These conditions are mentioned in order to show what should not be done in the case of a flue. It should not be too large in sectional area, and it should not be constructed of good conducting material, or exposed more than is unavoidable to cooling influences, such as damp or wind, on the exterior.

A short time since an announcement appeared in the *Journal* to the effect that the gas cooking stove had in one instance received a kind of official recognition from the building profession. Although, in a general way, there is one stove to every four residences in any large town, it is the exception and not the rule for such recognition to obtain. The house is designed on the assumption that a gas cooking stove will not be required, and apparently without knowledge of the existence of such an appliance; and, as a consequence, there is no proper accommodation for it when it comes. But we are told that, in a large block of suburban residences about to be erected, provision is to be made for a gas cooking stove in each house. Whether this "provision" consists simply of omitting to supply the usual "kitchener," leaving an empty chimney breast that can be utilized for a gas stove, or of an additional and special arrangement for the housing and ventilation of the gas stove, does not appear. Possibly the local gas company, in this case, may have been able to get a look-in, and have a word to say on the matter. But, however that may be, it is quite time that a general move was made on the part of gas undertakings towards securing from architects and builders official recognition of the existence of the gas cooking stove, by the provision of a proper and suitable location and surroundings for it in the designs of new houses, just the same as is done in the case of baths, hot closets, hot water supply, and other modern conveniences. The matter might well be taken in hand by the Gas Institute.

What I propose is that the attention of the building profession generally should be pointedly directed to the fact that, though a gas cooking stove may be dumped anywhere within (say) 6 feet of a chimney flue, and connected to it by the usual sheet iron pipe from the oven, and may under such circumstances give fair satisfaction in use, yet this is not a proper mode of procedure. It is not giving the appliance a fair chance, and it is subjecting the occupiers to risk of nuisance that they ought not to have to face. The primitive arrangement, consisting of a

1. *Journal of Gas Lighting.*

flat hearthstone and a hole in the roof, has long passed away. The unventilated gas stove is only one degree better in that there is no visible smoke or soot. There should be a space like a sentry box or open chimney breast, having backs and sides but open at the front, and lined with glazed brick or tile. It should be deep enough to allow of no projection, and large enough to admit of access on all sides for the purpose of cleaning. Under some circumstances, the space may be only large enough to take the stove, which may be bricked in solid on the sides and back. In this event, the outer case of the stove must be of cast iron. The opening in front should be sufficiently high to admit of convenient access to the boiling burners; and the whole should be surmounted by an inverted funnel-shaped hood leading to an upright flue of suitable proportions—say, 40 to 50 square inches sectional area, according to the size of stove provided for. The outer end of the flue should be fitted with a suitable rain and wind proof cap, and downdraught preventer; and it may conveniently consist of round pipes built in the brickwork.

Thus equipped, the full advantage of the gas cooking stove becomes apparent. There is no steam, or odor redolent of the cook shop or the gas works. The apartment in which the stove is situated is one of the best ventilated in the house. Weakly and sickly housewives—and there are many such among the class who, by force of circumstances, have to "do" for themselves—are relieved from one of the most objectionable features in their restricted daily round, the smell of cooking. In larger establishments, the gas stove which has, for the reasons above indicated, been banished to the back scullery or some other out-of-the-way place, not convenient of access in case of sickness, or when the ladies of the household wish to dabble in ornamental cooking, will be accorded a more prominent location within easy reach of the principal rooms. And last, but not least from the gas companies' point of view, that other 50 per cent. will begin to fill up, and the many advantages and conveniences offered by the gas stove will secure its universal adoption. But the gas stove will not take its proper place until it is clearly understood that the nearest chimney is not necessarily an efficient ventilating flue, and, with regard to cookers, that no arrangement is efficient or complete which does not deal with the whole of the steam and products of combustion.

The action proposed might take the form of advertisements in trade periodicals or current literature, or of illustrated pamphlets, leaflets, and circulars. A simple illustrated diagram embodying the points suggested, with descriptive letterpress, could be included on one side of a sheet of paper. The co-operation of the principal gas stove makers might be obtained, and the benefit of their knowledge and experience would be considerable.

Coal Resources of Alaska.

Alaska embraces about 600,000 square miles and stretches through nearly 20 degrees of latitude and 50 degrees of longitude. Practically no detailed investigations of any part of this vast territory have been made, and at least a third part of its area has not ever received preliminary topographic and geologic surveys. Our knowledge of its mineral resources is therefore very incomplete. What is known of its coal resources has been compiled and is presented by Mr. Alfred H. Brooks in Part III. of the Twenty-second Annual Report of the United States Geological Survey, now in press. This compilation is not from printed sources alone, but is largely from manuscript notes made on the spot by Mr. Brooks himself and by others. Mr. Brooks divides Alaska, for purposes of his report, as follows: Beginning on the south, southeastern Alaska includes the Pacific Ocean coastal belt and islands, extending northward to Mount St. Elias and norwestward so as to include the Copper River Basin. Beginning on the west, southwestern Alaska embraces the Aleutian Islands, Alaska Peninsular and adjacent islands, Kenai Peninsular, and the Cook Inlet region, with the drainage basins of its tributary rivers. The Kuskokwim region lies west of Bristol Bay and Cook Inlet and east and south of the Yukon, and drains into southeastern Bering Sea chiefly through the Kuskokwim river. The eastern part of this region is broken by the Alaskan Range of mountains. To the west of these mountains is the broad basin of the Kuskokwim river. A small southern part of this region drains directly into Bering Sea by a number of short rivers. The Yukon Basin includes a great area lying partly in Alaska and partly in British Northwest Territory and British Columbia. The chief tributaries of the Yukon are the Koyukuk, Tenana, Porcupine, White, Pelley and Lewes rivers, the two last uniting to form the Yukon proper, and their drainage basins are wholly within Canadian territory. The larger part of the basin is occupied by the great Yukon Plateau, sloping from about 5,000 feet near the head waters above sea level to 2,500 feet at the great bend of the river. East of this plateau lies the northern extension of the Rocky Mountains, which, near the Arctic coast, turn abruptly west parallel to the coast, forming the Romanzof, Davidson and DeLong mountains, the Arctic-Yukon watershed. On the southwest side of the Yukon Basin the Coast Range and the St. Elias Range and the Alaskan ranges form the barrier and in part the watershed of the basin. Northwestern Alaska includes an ill-defined area northwest of the Yukon Basin. Seaward Peninsular, cut off from the main land by Norton Sound on the south and Kotzebue Sound on the north, is an important feature of this province. Several rivers drain from this area into Bering Sea and the Arctic Ocean. Northeastern Alaska has been but little explored. It includes the drainage basins of rivers between Point Barrow and the international boundary. The geology and mineral resources of this region are unknown. The occurrence of coal in Alaska, as in the Western United States, is limited to rocks of the later geologic periods (the Mesozoic and Tertiary). The rocks of these ages have an extensive distribution in the territory, and at a number of widely separated localities workable coal beds have been found. In 1852, the Russian-American Company prepared to open coal mines at Port Graham on the western side of Kenai Peninsular, but soon abandoned their operations, though an American company mined coal at Port Chatham and supplied the Russian company's steamers for about ten years longer. In 1868, a few tons of coal were mined at Kootznahoo Inlet, Admiralty Island, for the United States steamship, Saginaw, and in 1868 coal was reported near Point Gardiner, Admiralty Island. Considerable prospecting has been done at Killisnoo, Admiralty Island, and the Firestone mine has been worked for local use since 1880, The Admiralty Coal and Fuel Company did considerable development work in 1900 at Point Gardiner.

In 1872, coal was mined at Coal Bay, Unga Island, for the United States steamship Humboldt, and the mining of these southern Alaska coals has gone on in a small way for a number of years. In 1888, the Alaska Coal Company began mining at Kachemak Bay, west of Kenai Peninsula; and since 1899 the Cook Inlet Coal Fields Company seems to have controlled this field and is now operating extensively. Since 1893, the Alaska Packers' Association has been mining intermittently at Chignik river, southeastern Alaska Peninsula. In 1889, the development of coal mines at Herendeen bay, Western Alaska Peninsula, was begun, but without great success. The coals of the Yukon river attracted little attention until the discovery of gold in the Klondike region in 1897. Within a year there were probably upwards of a hundred steamers on the Yukon river, with wood selling at from $8 to $20 a cord, and with no wood to buy on the lower Yukon below the Holy Cross Mission. Soon some of the larger companies established a coaling station at St. Michael for the use of river steamers; but with the resultant disadvantage that the steamer must take most coal when she has most freight. Much investigation of the coal supply of the Yukon river has taken place. In addition to coal mines in British Northwest Territory, the Alaska Exploration Company started some developments about 60 miles above Circle City on the upper Yukon. The oldest mine is Drew's, opposite the mouth of Hess Creek, where the workings are extensive and the equipment includes steam hoisting apparatus, coal bunkers, etc. The Pioneer mine, below Hess Creek and 30 miles above Rampart, is similarly equipped. Both mines produced considerable coal in 1900. Near Nulato, farther down the Yukon, the Blatchford and the Pickart mines produced some coal; and the Clemens Thein mine and the Williams mine, both between Nulato and Anvik, were small producers in 1900. As a result of the development of the Cape Nome gold fields, the Cape Lisburne coal deposits, in northwestern Alaska, have attracted renewed attention, and the Corwin Trading Company is now engaged in endeavoring to develop these deposits to supply Nome and the whaling ships, which have heretofore brought their coal from Puget Sound.

The coals are chiefly lignites, with some bituminous coals, and in a few localities semi-anthracites. Developments so far have been entirely along waterways. The southeastern and southwestern Alaska coal fields are on tide water along a coast affording good harbors open to navigation the entire year. They can be mined cheaply and can find a ready market for local steamboat and domestic use. No developments have been made of the higher grade coals of southern Alaska. These higher grade coals are worthy of the attention of prospector and capitalist, for, if found to occur in sufficient quantities, they could compete with all other coals in the Pacific Coast market. The Yukon coals, as developed, depend entirely on their local market; their grade is too low for exportation. Both the Yukon coals seem to vary greatly in character, and careful preliminary work should be done before a mine is developed. The Yukon coals are said to bring about $15 a ton

at the mines. Nome has offered a splendid market for coal during the last 2 years. Coal sold there at from $25 to $100 per ton, with an average price of about $40 to $50 per ton during the summer of 1900. It was this that led to the development of the Cape Lisburne field, where the coals are of a semi-bituminous character, which is only 200 miles distant. In 1900, about 13,000 tons of coal were shipped as cargo to Alaska from Washington ports, and probably still more was imported from British Columbia. No accurate data as to the coal produced by Alaskan mines are obtainable, but the total is probably between 4,000 and 5,000 tons, of which about a third is from mines on the Yukon river. Brief mention is made in the report of the three other sources of fuel supply, namely, peat, wood and petroleum.

Power Development at Niagara.

The *Electrical World* says that there is every prospect that the Niagara Falls Power Company will be delivering electric power from its second station about October 1. The output capacity of this second installation will be 55,000-horse power, developed by 11 generators operated by a like number of turbines, each being of 5,000-horse power capacity. The turbines are being placed in a new wheel pit that is 178½ feet deep, 18½ feet wide and which has a length of 463 feet 8 inches. The wheel pit is excavated out of solid rock, and to meet its requirements the tunnel was extended. The new power house covers the pit, having a total length of 560 feet. The power house is 70 feet wide, and on the west side there is a covered forebay structure that has a width of 40 feet. In this covered forebay structure the racks are placed, the water entering from the inlet canal through arches opened beneath the surface. The racks of the original power house are unprotected by a covering, and there is no forebay structure.

The National Contracting Company, of which Walter McCulloh is resident engineer at Niagara, completed its contract early in August. The completion of the contract of the National Contracting Company leaves the future work in charge of the Niagara Falls Power Company and the contractors on the power house and installation. The work of erecting the superstructure is in the hands of Mosier & Sumers, of Buffalo, and they have their contract well advanced. The building is nearly all roofed and slated, and attention is being given to the center gable and the storehouse structure at the rear end. From every point of view the new house is by far the superior of the old station, which has always been considered a very magnificent building. Beauty has been added at several points. The stone used in its construction is the same as used in the original building. The power house is fire-proof in all parts.

The turbines to be installed in the new pit are the product of the I. P. Morris Company, of Philadelphia, which company now has a force of men at Niagara on the work. Wheels Nos. 11, 12 and 13 are in place, and the shaft of Wheel No. 11 has been set. In this new station the wheels and generators will be numbered from No. 11 to 21 inclusive, as the machines in the old station are numbered from 1 to 10 inclusive. Thus the total equipment of the two great stations will be 21 turbines and the same number of generators, the total output capacity of which will be 105,000-horse power. The new turbines are of the internal discharge type, the water being carried off through draft tubes, giving an increase of about 10 per cent. to the effective head. The turbines were designed by Escher, Wyss & Co., of Zurich, Switzerland.

The generators for the new station are, as already noted, being manufactured by the General Electric Company, and the work of erecting the first one is now in progress. There will be two styles of generators in the new station, the first six to be very similar in design to those now in operation in station No. 1, with the exception that the bridge over the machines will be dispensed with. These six machines will be of the external revolving field type, while the other five will be of the internal revolving field type. The interior of the new power house, as well as the outside vicinity, presents a remarkable scene of activity, and many men are constantly on the jump in order that there may be no unnecessary delay in obtaining power at the earliest possible date. In the inlet canal a dredge, scow and tug are at work taking out the cofferdam erected to aid the forebay construction, while out in the river in front of the inlet canal, the channel is being dredged in order that there may be a free flow of water to the inlet both in summer and winter. An addition is being built to the transformer station, and this is an intimation that some of the current generated in the new power house will be transmitted to a distance from the Falls. Mr. William A. Brackenridge is the resident engineer of the Niagara Falls Power Company, and is giving careful supervision to the work.

SPECIAL ENGLISH CORRESPONDENCE.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, ENGLAND, Sept. 10th, 1902.

The Intermediary Token.—The Annual Reckoning.—Death of Mr. E. W. T. Richmond.—Natural Gas in England.

A somewhat troublesome point in connection with the use of slot meters is the token or valueless substitute that is occasionally made to do temporary duty for the legitimate coin. It is not wise to be too particular in dealing with customers, but at the same time the use of tokens may be carried to such an extent as to cause serious delay and inconvenience to the collectors, who cannot under some systems of collection, stop and carefully test the soundness of every coin in the till before leaving the premises. The extensive use of tokens also suggests more than a suspicion of fraud. There may be something more behind the scenes, but it is impossible on the face of the published evidence to withhold an expression of sympathy with a gas consumer at Bath, who was summoned for "fraudulently abstracting, using and consuming a quantity of gas to the value of 2d." The case for the prosecution was to the effect that the slot meter used by the defendant was found to contain 3s. 10d. in copper, a coronation medal and two bone disks. There appears to have been no objection to redeem the tokens with the equivalent in genuine current coin, and the explanation offered was that on returning home late one evening, the gas was cut off, and no one in the house happened to have the necessary copper to start it. Application to the next door neighbors was equally unsuccessful, and the defendant therefore used the medal and disks to start the meter. He had no fraudulent intention and objected to the use of that word in the indictment. His statement is supported by the fact that out of 49 pieces in the box, 46 were genuine, and an intentionally dishonest user would have obviously tried another tack. He was convicted of wrongfully obtaining gas and fined a nominal sum to cover costs. A thief is not honest to the extent of 94 per cent. and a rogue as to the remainder, and unless much more flagrant cases than the above are forthcoming the better way would be for the collector to take the 2d. offered and say no more about it. The case has resulted in a protest from the Secretary of a London gas company, who acknowledges that thousands of tokens have been found in his meters, but fraud had never been suspected, and the tokens had all been redeemed. He thought it a needless irritation to go to law in the absence of proof of deliberate fraud or theft, and that some course short of legal proceedings was preferable. The use of tokens is an objectionable complication for several reasons. The lady or gentleman of the house may be away for a week at the time of the collector's visit, necessitating a second call and a special entry in the daily record, together with a discordant note in the daily balance. It also opens the door to dishonesty on the part of the collector, who if so disposed could start out in the morning with a pocketful of tokens, and return in the evening with a pocketful of genuine coin in their place. It would only be a case of surreptitiously adding a token or two at each box where any of these conveniences were found. If the consumers thought he had put in three and the collector produced four he could scarcely dispute the tangible evidence. One would imagine that if these points were brought plainly before the customers by means of a circular, the desired effect could be secured without the aid of the man in blue. The intermediate token should be dealt with by common sense rather than by an action at law.

The case also suggests another thought, and that is how far the use of the intermediary token enters into ordinary business affairs. What about the promise to pay in a month the post dated cheque, the I. O. U., the promissory note, to say nothing of more questionable forms of "tokens." What would be the state of affairs in business circles to-day if all views of such devices were dealt with as summarily as the second defaulter at Bath?

August is the month for gas shareholders, as in most cases the principal meeting of the year is held at this period. Even where the accounts are made up every half year the summer meeting offers a better opportunity for discussing the position and prospects of affairs than is afforded at the time when the officials are fully occupied in meeting the maximum demands of the winter season. Questions affecting the price of coal, the policy as regards the customers, and so on, can be dealt with after the relief afforded by the comparatively quiet months of May, June and July; although, as I have previously pointed out, the *dolce far niente* of the summer months is gradually becoming a thing of the past. The gas cooking stove has had much to do in bringing about this state of affairs, and in undertakings of the foremost order the sales of gas in June and July are not less than half those of December and January.

Thirty years ago the ratio between maximum and minimum consumption per diem was as much as 5:1; now it is more like 2½:1. The August meetings have taken place, and the principal heads of the proceedings have been published, with the result, as indicated in my last letter, that the slight decrease experienced by The Gas Light and Coke Company, of London, proves to be almost a unique experience. The general rule is a substantia increase of sales, stimulated, no doubt, by the equally general reduction in price of gas, rendered possible by the removal of the heavy incubus in the coal market. They have also been assisted by the inauguration of a more favorable state of things in the incandescent mantle and burner department. No one, not even the gas undertakings, will be more benefited by this than the Welsbach Company themselves, who, if they will only put into the business as much capital and energy as they have hitherto expended upon legal proceedings against alleged infringers, may yet show a moderately respectable return upon their enormous capital. With a cheap, incandescent appliance there will be an enormous increase in its adoption amongst the wage earning classes. The way in which this section of the community took up petroleum showed that they like brilliant lighting when it can be had at a cheap rate, and their attitude in regard to petroleum will be repeated during the coming season in connection with the gas mantle and burner. The average artizan will take a pleasure in looking after the mantle when he finds there is money in it. This fact may be commended to the particular consideration of those who—and they are not a few—are complaining that the slot meter is not all profit. There were many who hesitated about putting a loading of 10d. or 1s. per 1,000 cubic feet on the slot meter, and thought that about 6d. was as much as was fair, and they now strongly appreciate the fact that 14 sixpences only make 7s., and that 7s. scarcely represents a fair rental on a slot meter, service and a few other etceteras. The outlay in many cases has been as much as £7 per consumer, and it is obvious that under such circumstances an average sale of about 20,000 cubic feet per consumer per annum is necessary to make the thing stand on its own bottom, and that when the average consumption per meter per annum is 14,000 or less, there is not much in it. If anyone, at present groaning under the load of a low average, cannot improve matters a little with the aid of the cheap incandescent burner, he will do well to quit gas enterprises in favor of some other occupation that will only draw very moderately on his mental capacity. The present is a good time for increasing the consumption per consumer amongst all classes, for more reasons than one. A good farmer does not need to be told "to make hay when the sun shines," and the managers of gas undertakings should be equally acute.

It is with feelings of the deepest regret that I refer to the death of Mr. E. W. T. Richmond, of London and Warrington, as the result of a bicycle accident. While spending a holiday in Cornwall in the company of a small family party he was taking a short turn on the wheel. They had reached the top of the hill that, as events prove, should have been labelled dangerous, and proceeded to descend. About half way down it was observed that the front brake of Mr. Richmond's machine was broken, and he shot ahead of his companions while still retaining some control by means of back pedalling. He had nearly reached level ground when in swerving to pass a vehicle he crashed into a moss covered stone at the road side, and was thrown violently, falling on his head. He was removed to an adjacent farm house and everything that skill could suggest was tried but of no avail, and after laying unconscious for several days he passed away. And thus we have lost a friend in the prime of life, activity, health and usefulness. It is safe to say that no one in the gas profession will be more widely and deeply regretted than the late Mr. Richmond, whose geniality, kindness and good humor secured him a welcome wherever he went. He was a model of energy and ability. He started his business only 12 years ago with a staff of under half a dozen, and from that small beginning has grown up, in that comparatively short period, the Richmond Gas Stove and Meter Company, of London and Warrington, with branches in all the principal towns, employing some 4,600 or 5,000 hands. His methods of business were characteristic and original, and he gave great attention to profit sharing, assisting gas companies in the placing of stoves, systematic canvassing and so on. He was also known outside gas circles, having given some attention to public matters, and was at the time of his unfortunate decease a candidate for Parliamentary honors. It is not too much to say that he has greatly benefited the gas industry, if only by his example. A look at him was enough to make one jump up and go out and sell a gas stove. It is hard to realize that this strong, lively personality is lost to us, and one cannot turn from such a sad event without a heartfelt expression of sympathy for the widow, the family, the relatives, and the large circle of business associates, even the humblest of whom will feel that he has lost a personal friend.

Natural gas has been under the notice of the company promoter with the result that any speculators who desire to share in the profits to be obtained by exploiting the natural gas fields of England, can do so to a moderate extent, as a few shares (£1 paid up) are obtainable for the modest consideration of £10 each. The capital of "The National Gas Fields of England, Limited" is not excessive, being only £100,000, considering its objects, which amongst other things, are to make borings, experiments and other works for ascertaining the existence of natural gas, mineral oil and other minerals believed to exist in England, and to carry on the business of producing supplies of gas. It will be news to many persons, otherwise well informed, that natural gas is to be obtained to any important extent in England. The railway station at Heathfield, Sussex, is lighted by this means, and it is said that "over a hundred dwellings besides the street lamps" are about to be supplied. But it is stated that several wells have been sunk with satisfactory results and that one of them is capable of yielding 25 million cubic feet of gas per day, or more than enough to supply the whole of London. One might suppose that this particular boring was the last of the several, as after such a big find it seems superfluous to go on boring for more. By the time the pipes have been laid for the supply of the 25 millions to a sufficient number of customers to swallow it all up the £100,000 will be seriously encroached on. But it is hinted as probable that the production may equal or even surpass that of America, which in the year 1900 was valued at about five million sterling. A well of the above named capacity of supply would be worth £70,000 to £80,000 per annum taking the product at the net value of 2d per 1,000 cubic feet, so that 60 to 70 wells would be needed to reach the American output. With these prospects in view the generosity of those who have secured the concessions for the English oil districts, in allowing even a limited portion of the capital to go out to the public at a premium of 1,000 per cent. is remarkable. But the cautious investor will ask for some further evidence not only as to the quantity available but also the quality, purity and permanency of the supply. Big projects seem to be in the air just now. Instead of the modest local company intended to cater for the needs of a township or district, we have gigantic schemes including a few counties, and the above goes further and serves the whole country. Have the projectors of schemes on these Brobdingnagian lines ever seriously and carefully calculated out the cost of distributing plant, and the means of dealing with fluctuations in demand?

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

Mr. John W. Cawley, of Boston, who recently purchased the franchise and property of the Nantucket (Mass.) Electric Company, has secured control of the Nantucket Gas Company. He will rebuild the plants of both systems.

Mr. J. C. Norcross, who has for some time been in charge of the gas and electric lighting plants at Spartanburg, S. C., has been appointed Superintendent of the Brockton (Mass.) Company's works.

Colonel Gustav Pabst has been elected a member of the Board of Directors of the Milwaukee (Wis.) Gas Light Company, vice Mr. W. F. Douthirt, resigned.

At the hearing before the Board of Gas and Electric Light Commissioners of Massachusetts, on the petition of the Attleboro Steam and Electric Company for permission to increase its capital stock in the sum of $40,000, the proceeds to be devoted to plant extensions, no opposition was made.

At a special meeting of the Directors in the Pawtucket (R. I.) Gas Company, Mr. Frederick W. Easton, formerly Secretary of the Company, was elected President, to succeed the late Mr. Lyman M. Darling. Mr. Wm. McGregor was elected Secretary. The Eastern gas men will undoubtedly coincide with us in the assertion that these are two excellent appointments.

The Lowell (Mass.) Gas Light Company will have its main lines extended to Chelmsford and all intending consumers hooked up by November 10th.

At the annual meeting of the Amherst (Mass.) Gas Company the officers chosen were: Directors, E. D. Marsh, M. A. Dickinson, L. M. Hills, Henry Adams, Frederick Tuckerman, C. F. Deuel and Geo. Cutter, Jr.; President, E. D. Marsh; Treasurer and Clerk, C. F. Deuel; Superintendent, David Barry; Auditor, F. C. Sherwin. The Company's capacious and up-to-date electric lighting plant is well along to completion.

MESSRS. ADAM WEBER SONS, of New York City, and Weber, N. J., inform us that recent contracts awarded them for chimneys of their particular type of construction include the following: The Corona Kid Company, Bristol, Pa.; Norristown (Pa.) Electric Light and Power Company; Wooster (O.) University; Morgan Steam Power Plant, Springfield, Mass.; New Amsterdam Gas Company, Ravenswood, L. I.; St. Francis Hospital, New York City; Somerset (Pa.) Electric Light, Heat and Power Company; Auburn (N. Y.) Inter-Urban Railway Company; Peter Doelger, New York City.

MR. HERMAN WEISLINK, who had been in the offices of the Auditor of the Consolidated Gas Company, of this city, for several years, died at his desk the morning of the 15th inst. He was in his 49th year.

AT the annual meeting of the Jamaica (L. I.) Gas Light Company and the Woodhaven (L. I.) Gas Light Company—the districts of both Companies adjoin, and they are controlled by the Brooklyn Union Gas Company—the following Directors were elected: E. R. Chapman, W. K. Rossiter, A. F. Staniford, W. D. Chapman and C. A. Bramley.

MR. J. M. BERKLEY recently resigned the position of Superintendent to the Mobile (Ala.) Gas Light and Coke Company in order to assume the position of Superintendent of construction in the service of Mr. C. H. Evans, of Chicago, who is the constructing engineer for the Citizens Gas Light and Coke Company, the plant for which is now being erected at Findlay, O. Mr. Evans is also interested in like work at two other points.

THE plant of the Tampa (Fla.) Gas Company is being enlarged and improved. Notable in the list of betterments is a storage holder and additional generating sets. The cost of the betterments is put at $60,000.

THE Lincoln (Neb.) Gas and Electric Company has leased commodious office quarters in the well located, new business building known as the Schlesinger Block.

A CORRESPONDENT forwards the following: "The charter of the Iowa City Gas Light Company, of Iowa City, Iowa, expired recently. The Company has been reorganized, new articles of incorporation have been perfected, and the capital stock has been increased to $200,000, from $100,000. In a short time the President of the Company, Mr. Thomas C. Carson, will meet his brother in New York, when definite plans for enlarging and remodeling the existing plant will be determined. It is likely than an entirely new plant will be erected, but in any event new methods will be utilized in and around the works, and the residents of the city may count upon it that the completion of reconstruction will be followed by a sensible cut in the selling rates."

THERE has been filed with the Secretary of State a formal certificate announcing the merger of the Queens Borough Gas and Electric Company with the Town of Hempstead Gas and Electric Light Company, all of Queens county, L. I.

THE Consolidated Gas Company, of Baltimore, Md., according to a recent issue of the Baltimore *News*, has between 6,000 and 7,000 of Welsh anthracite en-route to it, from Cardiff. The first cargo should have been received towards the close of last week.

"R. V. A.," WRITING to the JOURNAL from Cincinnati, O., under date of the 19th inst., says: "Mr. Charles J. Foust, Treasurer of the Cincinnati Gas and Electric Company, died suddenly the evening of the 13th inst., at his home, Ruth avenue, Walnut Hills. Deceased, who was 48 years of age, was confined to his room by illness for something over two weeks, but his condition was not considered serious; in fact within a day or so of his death it was thought that a marked change for the better was observable. Heart failure was the cause of his demise. Mr. Foust came to Cincinnati from Indianapolis in 1878, and after a fairly successful career in business in 1887 entered the service of the Cincinnati Gas Company. By steady attention to business he advanced gradually in the Company's service and in 1898 he was elected its Treasurer, which position, as before noted, he held at the time of his death. He is survived by his widow and two children. One of the latter (Mr. C. Ellis Foust) is in charge of the Brown-Rogers steel interests at Birmingham, Ala. Interment was made in Indianapolis the 16th inst."

A CORRESPONDENT in St. Joseph, Mo., forwards the following, under date of the 21st inst.: "The stockholders of the St. Soseph (Mo.) Gas Company held their annual meeting in the offices at 516 Francis street on the 17th inst. for the purpose of electing officers for the ensuing year and to discuss plans for the future development of the Company. All the Directors were present and a satisfactory meeting was held. Many things of minor importance came up for consideration and the representatives of the Company were in session the greater part of the day, but the principal part of the business was transacted in the morning. The Company has decided to erect a new office building as its present quarters are deemed inadequate. A lot covering a half block at the corner of Francis and Eighth streets has been secured, and a modern building begun thereon next spring. Definite plans have not been determined upon for the structure, but it will be modern in every detail and used exclusively by the officials of the Gas Company. The Company intends to improve its service and extend its mains to every part of the city. Its success during the past year warrants extensive improvements. Among the noted improvements recently made is the extension of numerous mains to the stockyards in South St. Joseph, and to the north and east part of the city. The Company intends to extend its pipes as far as Krug Park in a short time. The gas works on Cedar and Atchison streets have recently been remodeled and new and improved machinery installed. President W. F. Douthirt has notified the Company of his intention to resign. It is expected that he will hand in his resignation in a short time. However, the stockholders have not been informed just when he will do so. The officers elected were: Directors, W. F. Douthirt, Milton Tootle, Jr., Huston Wyeth, Chas. A. Pfeifer, S C. Woodson, H. R. W. Hartwig, James Campbell, W. A. P. McDonald and L. C. Burnes; President, W. F. Douthirt; Vice-President, W. A. P. McDonald; General Manager, K. M. Mitchell; Secretary and Treasurer, F. Labrunerie; Assistant Secretary and Treasurer, C. T. Scoville.

AT the annual meeting of the Worcester (Mass.) Gas Light Company the officers elected were: Directors, Charles D. Lamons, A. G. Bullock, Josiah H. Clarke, Albert Wood, Francis H. Dewey and Samuel B. Woodward; President, Charles D. Lamson; Treasurer and Clerk, James P. Hamilton.

THE Board of Directors of the Consumers Gas Company, of Johnstown, Pa., have accepted the resignation of Mr. James G. Ellis, President of the Johnstown Light, Heat and Power Company, from the Board. Mr. H. H. Weaver, assistant to the General Manager of the Cambria Steel Company, was chosen to succeed Mr. Ellis.

THE new gas works at La Salle, Ills., is in good working order, and Manager Bedard says that he is ready to meet any demand that may be made. The name of the Company has been changed to that of the Citizens Lighting Company.

THE City Council of Cambridge, Md., recently closed a contract with the local Gas Company for the public lighting of the city for a period of years. According to the terms of the agreement the Gas Company is to furnish 130 lights, 50 of which are to be burned all night and the remainder until 12 o'clock, 20 consecutive nights of each month. The lights are to be equipped with Welsbach burners or others equally as good, and all the lights are to be of 60-candle power. The additional lamps necessary to bring the total number up to 130 are to be located at points agreeable to both parties to the contract. If at any future time during the life of the contract the Commissioners desire additional lamps the Gas Company agrees to furnish the samé at the same rate per lamp as those provided for in the contract, $27 per year for each lamp that burns all night, and $19 per year for each of the others.

THE corporate title of the Charleston (Ills.) Gas Company has been changed to that of the Charleston Gas and Electric Company.

MR. C. W. TIPPY, formerly Assistant General Superintendent of the Detroit City Gas Company, has been appointed General Manager of the Fulton (N. Y.) Fuel and Light Company, the proprietors of which propose to construct a plant at the named place. Other Detroiters interested in the enterprise are Messrs. H. W. Noble and W. G. Moss.

THE people of Warren, Ills., express themselves as very well pleased with the service that is being given them at the hands of the Warren Gas Light and Fuel Company, the works of which were put in active commission about a fortnight ago.

THE Committee of the City Council of South Norwalk, Conn., has reported in favor of the construction of a municipal electric lighting plant.

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NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.
AMERICAN GAS LIGHT ASSOCIATION.
WESTERN GAS ASSOCIATION.
OHIO GAS LIGHT ASSOCIATION.
PACIFIC COAST GAS ASSOCIATION

Notification Respecting Advertising.—Orders for new advertising, or for changes in standing advertisements, to insure attention in the issue following their reception, must be in hand any time of Wednesday.

AGENTS:

New York—American News Co. 39 and 41 Chambers St.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime Street, London.

MONDAY, SEPTEMBER 29, 1902.

The Market for Gas Securities.

The unsettled money market, the vagaries of which are surprising even to those who are well posted as to the ebb and flow of cash from business centers to agricultural regions, is mainly responsible for the slumps that occurred last week in gas shares. Certainly, the general share list suffered as well, but not in like proportion. One very disturbing feature in connection with the gas business at present, and it will not down, is the condition of the coal and coke supply. Those concerns that elected to depend wholly upon water gas are really in a bad way, for anthracite is impossible to obtain, and coke is now commanding in this vicinity from $6 to $9 per ton. That simple statement shows how real the trouble is. Even the companies that can turn out a considerable output of coal gas are confronted with bituminous coal at $6 per ton. However, they will get some return on coke account.

Consolidated closed to-day at 220½ to 222, and Brooklyn Union was quoted at 235 to 245. Peoples, of Chicago, shows a decline of virtually 2 points for the week. Washington gas is a trifle weaker, and Baltimore Consolidated holds its own fairly. If it were not for the coal situation gas shares would be booming, for our reports of output from all sections of the country for the first two weeks of this September, as against last September, show a gain of something over 12 per cent.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

SEPTEMBER 29.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated	$78,177,000	100	220¼	222
Central Union, Bonds, 5's.	3,000,000	1,000	110	112
Equitable Bonds, 6's	1,000,000	1,000	105	..
" 1st Con. 5's	2,300,000	1,000	118	120
Metropolitan Bonds	658,000	.	108	113
Mutual	3,500,000	100	350	..
Municipal Bonds	750,000	.	..	..
New Amsterdam Gas Co. Bonds, 5's	11,000,000	1,000	112½	113
Northern Union, Bonds, 5's.	1,250,000	1,000	108	110
New York and East River Bonds 1st 5's	3,500,000	1,000	112	113
" 1st Con. 5's	1,500,000		109	111
Richmond Co., S. I.	348,650	50	100	..
" Bonds	100,000	1,000	103	
Standard	5,000,000	100	130	140
Preferred	5,000,000	100	150	160
Bonds, 1st Mortgage, 5's	1,500,000	1,000	115½	118
Yonkers	299,650	500	130	
Out-of-Town Companies.				
Brooklyn Union	15,000,000	100	235	245
" " Bonds (5's)	15 000,000	1,000	119	119½
Bay State	50,000,000	50	1¼	1⅝
" Income Bonds	2,000,000	1,000	.	75
Binghamton Gas Works.	459,000	100	28	30
" 1st Mtg. 5's	509,000	1,000	93	96
Boston United Gas Co.— 1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	10½	11
" " Bonds, 5's	5,256,000	1,000	79	81
Capital, Sacramento	500,000	50	..	35
Bonds (6's)	150,000	1,000		
Central San Francisco	2,000,000	..	106	108
Chicago Gas Co. Guaranteed Gold Bonds	7,650,000	1,000	104	104½
Cincinnati Gas & Elec. Co.	20,500,000	100	100½	100¾
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	101	101½
Columbus (O.) Gas Lt. & Heating Co	1,682,750	100	88¾	89¼
Preferred	3,026,500	100	105½	109
Consumers, Jersey City Bonds	600,000	1,000	102	103
Consumers, Toronto	1,700,000	50	218	225
Consolidated, Baltimore	11,000,000	100	73½	74
Mortgage, 6's	3,600,000	..	..	115
Chesapeake, 1st 6's	1,000,000	..	..	..
Equitable, 1st 6's	910,000	..	..	..
Consolidated, 1st 5's	1,490 000			112
Consolidated Gas Co. of N.J.	1,000,000	100	15	17
" Con. Mtg. 5's	880,000	1,000	85	87
Consolidated G. & E. Co.'s., Little Falls, N.Y.	90,000	100	..	100
Bonds	75,000	..	..	100
Detroit City Gas Co	4,825,500	50		89
" Prior Lien 5's	5,603,000	1,000	99½	100
Detroit Gas Co., 5's	852,000	1,000	77	79
" Inc. 5's	16,000	100	94	94½
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	.	101
Essex and Hudson Gas Co.	6,500,000	..	34	38
Fort Wayne	2,000,000	..	.	.
" Bonds	2,000,000	..	55	..
Grand Rapids Gas Lt. Co. 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	245	265
Hudson County Gas Co., of New Jersey	10,500,000	..	25	..
" Bonds, 5's	10,500,000	..	101	103
Indianapolis	2,000,000	..	70	80
" Bonds, 6's	2 650,000	..	102¾	104⅜
Jackson Gas Co	250,000	50	73	75
" 1st Mtg. 5's	200,000	1,000	101	102¾
Kansas City Gas Light Co., of Missouri	5,000,000	100	..	30
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede, St. Louis	10,000,000	100		92
Preferred	2,500,000	100	..	110
Bonds	10,000,000	1,000	109½	110
Lafayette Gas Co., Ind.	1,000,000	100		60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	112	120
Madison Gas & Elec. Co. " 1st Mtg. 6's	350,000	1,000	107½	110½
" 6 per cent. scrip, due 1910	100,000	25	25	37
Montreal, Canada	2,000,000	100	182	184¾
Newark, N. J., Con. Gas Co	6,000,000	..	56	58
Bonds, 6's	4,600,000		105	105¾
New Haven	1,000,000	25	300	325
Nashville Gas Lt. Co.	1,000,000	100	110	..
Oakland, Cal.	2,000,000	..	46	47
" Bonds	750,000	..	..	..
Peoples G. L. & Coke Co., of Chicago	25,000,000	100	105¼	105⅜
Peoples Gas Lt. & Coke Co., Chicago, 1st Mortgage	20,100,000	1,000	..	..
2d "	2,500,000	1,000	104	
Rochester Gas & Elec. Co.	2,150,000	50	88	
Preferred	2,150,000	50	118	
Consolidated 5's	2,000,000		87½	90
San Francisco, Cal.	10,000,000	100	48	48½
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgage 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	92	94
St. Joseph Gas Co. " 1st Mtg. 5's	751,000	1,000	93	96½
Syracuse, N. Y.	1,975,000	100	29	..
Bonds	2,047 000	1,000	95¼	100
Washington, D. C	2,600,000	20	37¾	..
First mortgage 6's	600,000	.	..	..
Western, Milwaukee. Bonds, 5's	4,000,000	..	109¼	110
Wilmington, Del.	600,000	50	232	

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DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, PA., Sept. 10, 1902.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable Oct. 15th, 1902, to stockholders of record at the close of business, Sept. 30, 1902. Checks willbe mailed.

1423-5 LEWIS LILLIE, Treasurer.

Gas Analyses of All Sorts and Conditions,

—OR—

Analyses of Solid and Liquid Materials as Well,

That are needed by Gas Companies at any time in the conduct of their business, may be obtained from

DR. W. H. BIRCHMORE,

1421-tf 341 ADELPHI ST., BROOKLYN, N. Y.

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As Superintendent or Manager,

Or will lease a gas works, by an up-to-date gas man. Hustler for new business. Thoroughly conversant with the manufacture of gas, the laying of high and low pressure mains, and the selling of gas stoves. Can give the best of references. Address, "W. E. F."

1423-3 Care this Journal.

Position Wanted.

A YOUNG MAN, 28 years of age, sterling habits, gilt-edge references, 11 years in the gas and electric business, at present Manager in town of 10,000, desires position as Secretary or Manager of gas or electric plants in city of not less than 20,000.

1425-4 Address, "L.," care this Journal.

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By a young man thoroughly conversant with the gas industry, including the financial, manufacturing and distributing divisions. Also, the installation of gas engines and other appliances, repairs to meters, etc. Has been superintendent of a company until the recent transfer of all the stock to new owners. Address, "HUSTLER,"

1425-1 Care this Journal.

WANTED,

A GAS MAKER.

Good wages to one with New York engineers' license. Address, "J."

1425-2 Care this Journal.

WANTED,

A Second-hand, No. 6 Sturtevant Gas Blower.

Must be in first-class order. State price, net. Address, "THE GAS COMPANY OF WEST CHESTER, PA."

1424-2

WANTED,

A Good Retort House Foreman.

1424-tf Address, "GAS COMPANY," care this Journal.

WANTED,

Second-hand Station Meter,

from 60 to 72 inches diameter.

Four Purifying Boxes, 9 feet by 12 feet, or about that capacity.

1416-tf Address, G. M. ROSSMAN, Treas., Keene, N. H.

Purifiers for Sale.

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PITTSFIELD COAL GAS COMPAFY,
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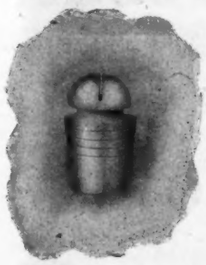

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Five-foot Water Gas Apparatus,

Consisting of generator, carburetor, superheater, seal, scrubber, condenser; two (2) 15-horse power engines; two (2) blowers, wall brackets, countershaft, belting, etc.

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Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

Ammonia Concentrator.

Not Expensive. Write to

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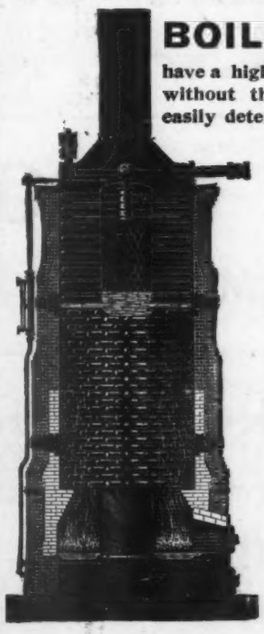

have a high factor of safety without the use of thick, easily deteriorated plates.

They are made to give the greatest service with the least necessity for renewed parts, and these are so subdivided that changes can be economically made. The Hazelton saves money. A trial will prove it.

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To burn a given amount at a stated pressure, made to order. Samples furnished. Also, small oil and air valves, slow-feed valves for high pressure, and small brasswork in general.

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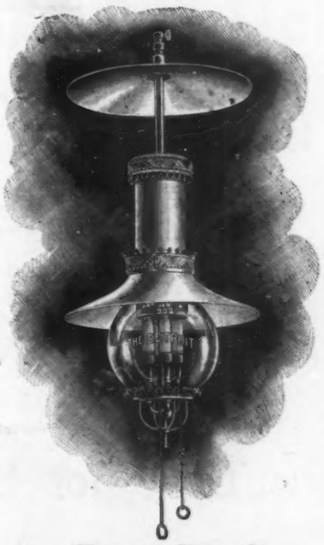

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No Chimneys to Break.
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Our lamp gives 25 per cent. ***more light*** with 20 per cent. ***less gas*** than any Arc Gas Lamp now on the market.

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Chollar's System of Gas Purification.

THE PURIFIED GAS REVIVES THE FOULED OXIDE.

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DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, PA., Sept. 10, 1902.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable Oct. 15th, 1902, to stockholders of record at the close of business, Sept. 30, 1902. Checks willbe mailed.

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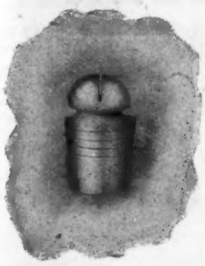

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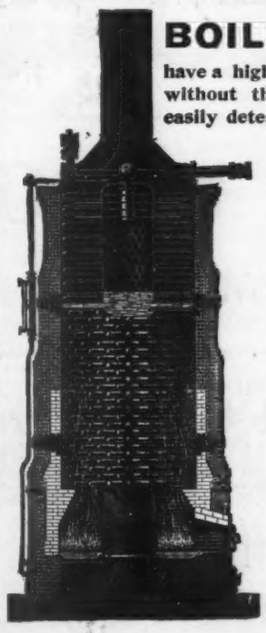

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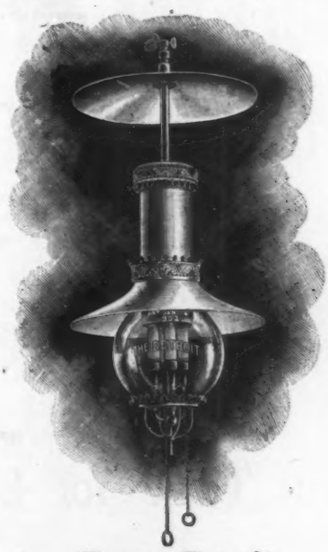

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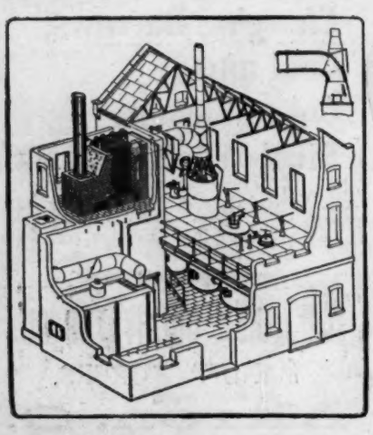

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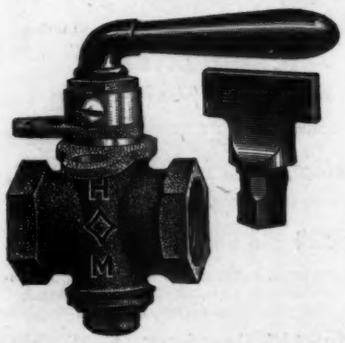

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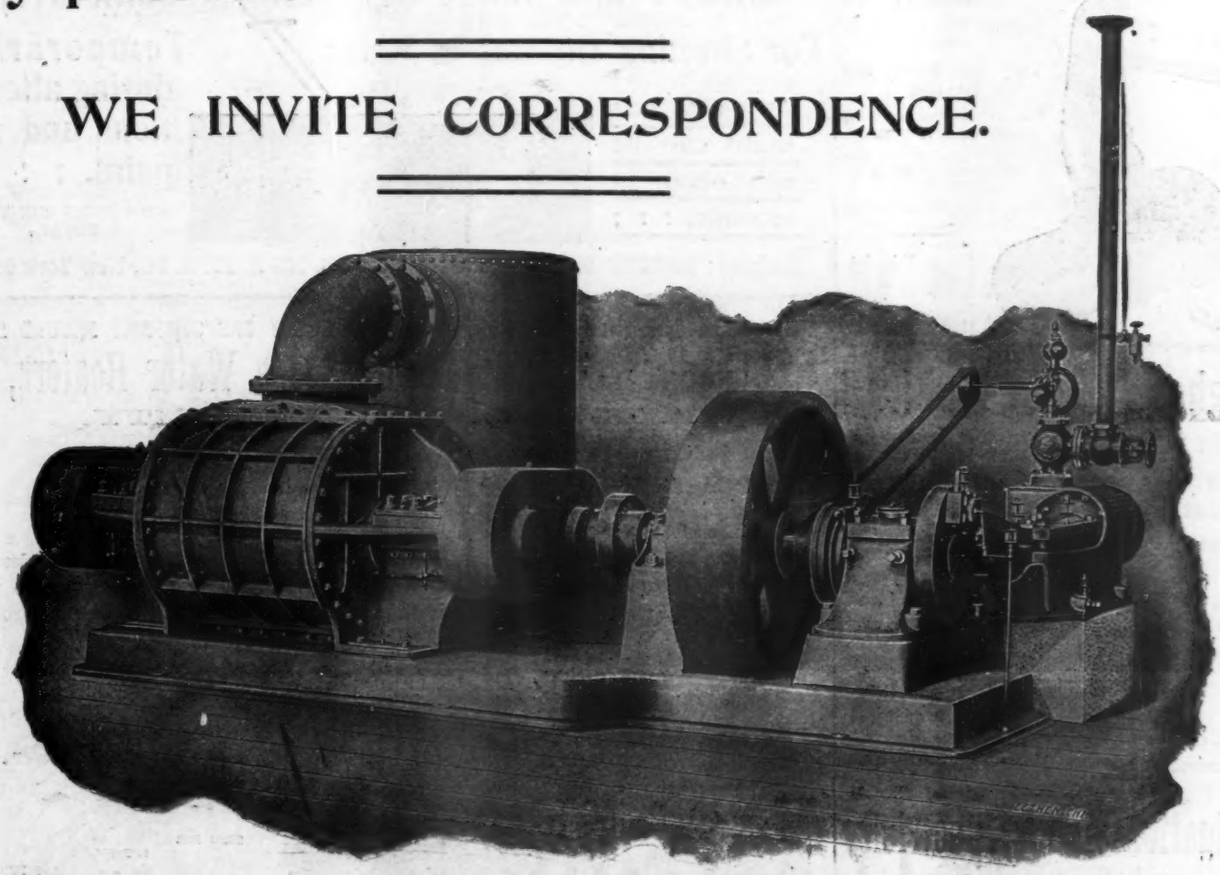

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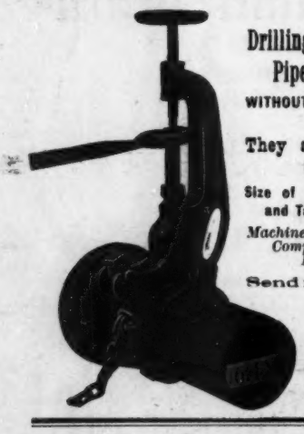

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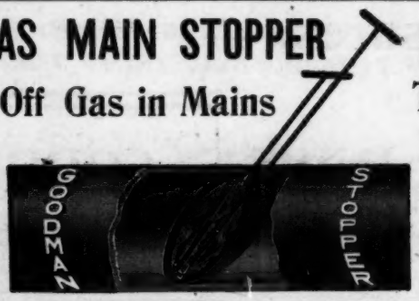

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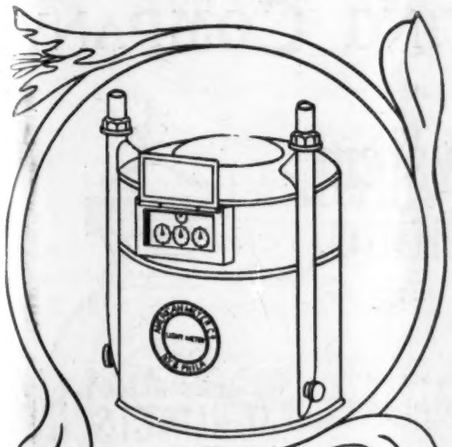

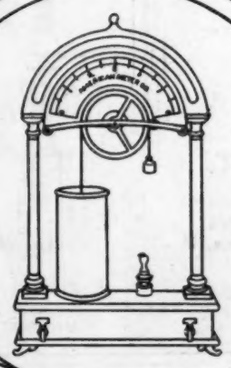

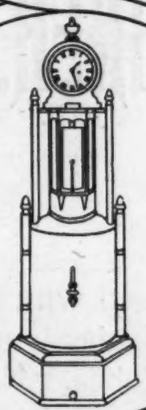

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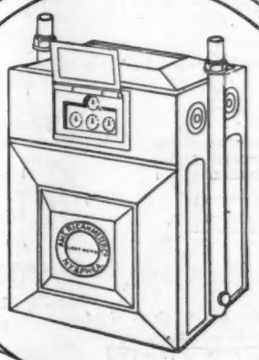

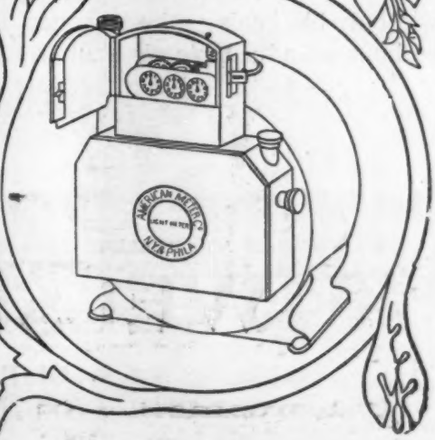

PUBLIC LIGHTING TABLE.

OCTOBER, 1902.

Day of Week.	Date.	Table No. 1. FOLLOWING THE MOON. Light.	Table No. 1. FOLLOWING THE MOON. Extinguish.	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING. Light.	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING. Extinguish.
				P.M.	A.M.
Wed.	1	6.10 PM	5.00 AM	5.30	5.00
Thu.	2	6.10	5.00	5.30	5.00
Fri.	3	6.10	5.00	5.30	5.00
Sat.	4	6.10	5.00	5.30	5.00
Sun.	5	6.10	5.00	5.30	5.00
Mon.	6	7.50	5.00	5.30	5.00
Tue.	7	8.30	5.00	5.30	5.00
Wed.	8	9.20	5.00	5.20	5.10
Thu.	9	10.20 FQ	5.00	5.20	5.10
Fri.	10	11.10	5.00	5.20	5.10
Sat.	11	12.10 AM	5.00	5.20	5.10
Sun.	12	1.10	5.10	5.20	5.10
Mon.	13	2.10	5.10	5.20	5.10
Tue.	14	3.20	5.10	5.20	5.10
Wed.	15	No L.	No L.	5.10	5.20
Thu.	16	No L. FM	No L.	5.10	5.20
Fri.	17	No L.	No L.	5.10	5.20
Sat.	18	5.40 PM	7.20 PM	5.10	5.20
Sun.	19	5.40	8.10	5.10	5.20
Mon.	20	5.40	9.10	5.10	5.20
Tue.	21	5.40	10.10	5.10	5.20
Wed.	22	5.40	11.10	5.00	5.30
Thu.	23	5.40 LQ	12.20 AM	5.00	5.30
Fri.	24	5.40	1.20	5.00	5.30
Sat.	25	5.40	2.30	5.00	5.30
Sun.	26	5.30	3.30	5.00	5.30
Mon.	27	5.30	5.30	5.00	5.30
Tue.	28	5.30	5.30	5.00	5.30
Wed.	29	5.30	5.30	4.45	5.35
Thu.	30	5.30 NM	5.30	4.45	5.35
Fri.	31	5.30	5.30	4.45	5.35

TOTAL HOURS LIGHTING DURING 1902.

By Table No. 1.	Hrs.Min.	By Table No. 2.	Hrs.Min.
January	238.30	January	423.20
February	196.20	February	355.25
March	196.20	March	355.35
April	166.40	April	298.50
May	151.40	May	264.50
June	131.10	June	234.25
July	142.40	July	243.45
August	162.00	August	280.25
September	179.00	September	321.15
October	216.30	October	374.30
November	224.10	November	401.40
December	250.00	December	433.45
Total, yr.	2255.00	Total, yr.	3987.45

NEW YORK, 33 Nassau Street. PHILADELPHIA, Broad and Arch Streets. CHICAGO, Foot of Orleans Street. BOSTON, 624 Tremont Building.
CLEVELAND, 809 Cuyahoga Building. ST. LOUIS, 712 Roe Building. SAN FRANCISCO, 712 Polk Street.

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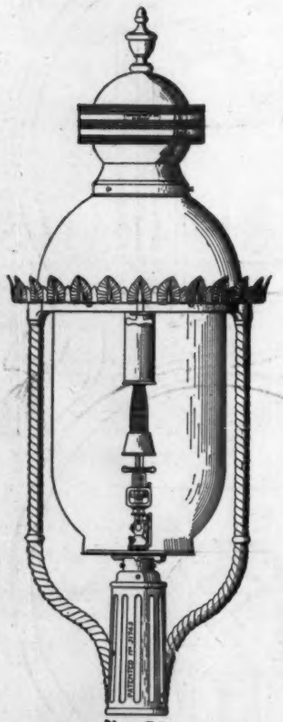
.... OF AMERICA ....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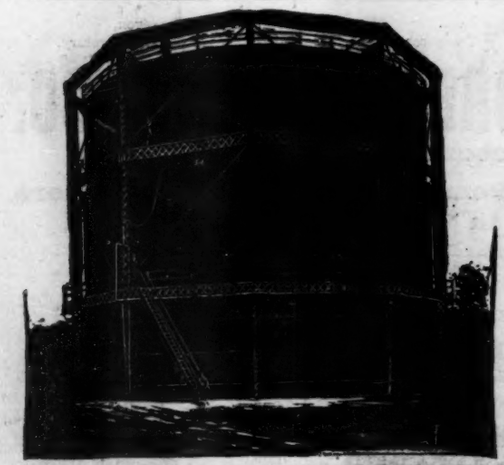

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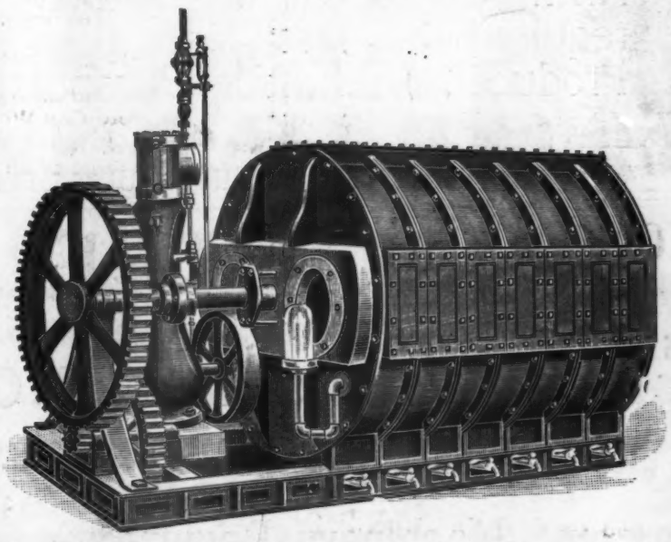

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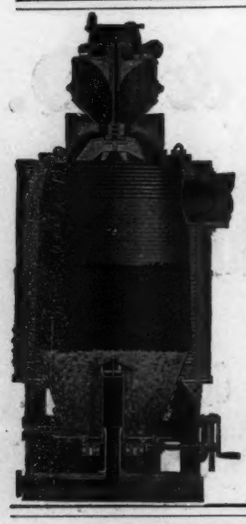

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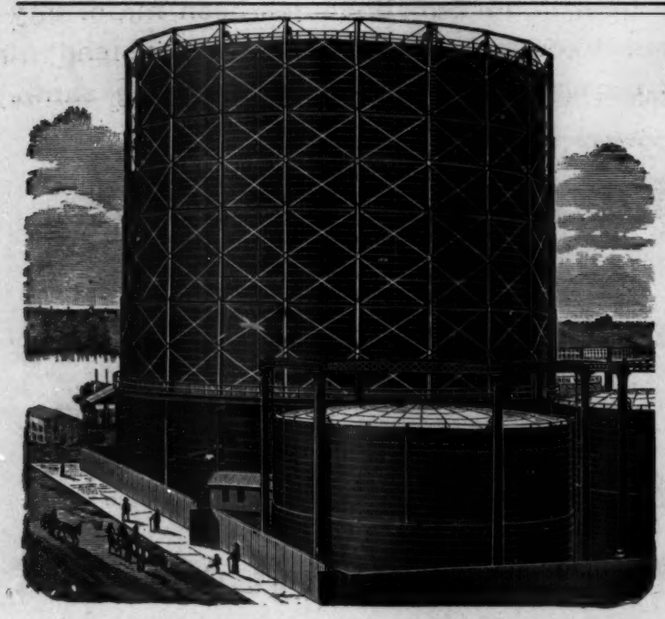

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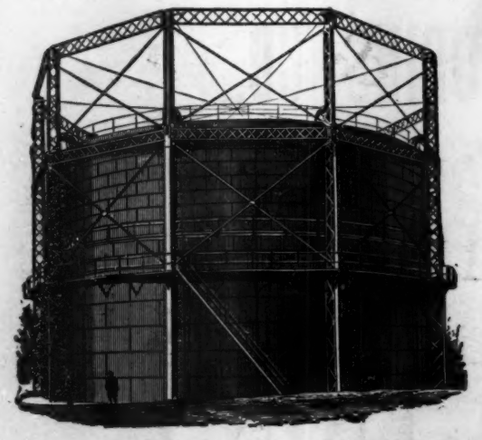

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